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**Appendix V**  
**Draft Biological Assessment**

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# Chatfield Reservoir Storage Reallocation Project

## Biological Assessment

Draft

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Prepared for: U.S. Army Corps of Engineers, Omaha District

For Submission to: U.S. Fish and Wildlife Service, Region 6 Ecological Services, Lakewood, CO

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## ATTACHMENTS

Attachment 1: PRRIP BA

## Acronyms

BA	Biological Assessment
CDOW	Colorado Division of Wildlife
cfs	Cubic feet per second
CMP	Compensatory Mitigation Plan
CWCB	Colorado Water Conservation Board
DWD	Denver Water Department
EFUs	Ecological Functional Units
EIS	environmental impact statement
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FR/EIS	feasibility report and environmental impact statement
LPN	listing priority number
M&I	Municipal and industrial
msl	mean sea level
NEPA	National Environmental Policy Act
NGPC	Nebraska Game and Parks Commission
NTGW	nontributary groundwater
OHWM	Ordinary High Water Mark
P&Gs	Principles and Guidelines
PBO	Programmatic Biological Opinion
PCEs	Primary Constituent Elements
PRRIP	Platte River Recovery Implementation Program
SFU	State Fish Unit
SMWSA	South Metro Water Supply Authority
SPWRAP	South Platte Water Related Activities Program, Inc.
T&E	threatened, endangered, and candidate species
ULTO	Ute ladies'-tresses orchid
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WCD	Central Colorado Water Conservancy District
WSD	Water and Sanitation District



## 1.0 Introduction

The U.S. Army Corps of Engineers (USACE) is preparing a Feasibility Report and Environmental Impact Statement (FR/EIS) for the proposed Chatfield Reservoir Storage Reallocation project. As an appendix of the FR/EIS and in compliance with Section 7(b) of the Endangered Species Act (ESA), this Biological Assessment (BA) has been prepared to address potential effects to federally-listed threatened, endangered, and candidate species (T&E species), and their critical habitat, from construction, operation, and maintenance of the Proposed Action (i.e., Alternative 3 of the FR/EIS). The ESA requires federal agencies to consult with U.S. Fish and Wildlife Service (USFWS) on actions that have the potential to affect federally-listed species or their designated critical habitat. The Proposed Action would allow for a maximum reallocation of 20,600 acre-feet, representing a maximum increase in the elevation of the permanent pool from 5,432 feet above mean sea level (msl) to 5,444 feet msl (see Section 2 for additional discussion of the Proposed Action). Whereas, the FR/EIS addresses the Proposed Action and three alternatives to the proposed action, this BA specifically addresses the Proposed Action.

The BA includes a description of the Proposed Action (Section 2), a description of the study area for the Chatfield Reservoir Storage Reallocation project (Section 3), a description of the Biological Assessment process and T&E species evaluated (Section 4), an analysis of potential impacts of the Proposed Action on federally-listed species (Section 5), an effects determination for the T&E species (Section 6), and a description of proposed conservation measures (Section 7), including a mitigation project in the Pike National Forest (Section 8).

## 2.0 Proposed Action

The Proposed Action would grant reallocation of flood storage at Chatfield Reservoir to increase water storage capacity for 15 local water providers (Table 1). The Proposed Action would allow for a maximum reallocation of 20,600 acre-feet, representing a maximum increase in the elevation of the permanent pool of 12 feet, from 5,432 feet above mean sea level (msl) to 5,444 feet msl. The purpose of and need for the Proposed Action is to increase availability of water, sustainable over the 50-year period of analysis, in the greater Denver, Colorado Metropolitan Area so that a larger proportion of existing and future (increasing) water needs can be met (for further details on the Purpose and Need see Chapter 1 of the FR/EIS). The reallocated storage space in Chatfield Reservoir would be filled using existing or new water rights, including wastewater return flows and other decreed water rights, belonging to a consortium of water providers. The primary objective of the reallocation is to help enable water providers to supply water to local users, mainly for municipal and industrial (M&I), and agricultural needs, in response to rapidly increasing demand. Chatfield Reservoir is well placed to help meet this objective, because the reservoir provides a relatively immediate opportunity to increase water supply storage without the development of significant amounts of new infrastructure. It lies at the confluence of the South Platte River (efficient capture of runoff) and Plum Creek, and it provides an opportunity to gain additional use of an existing federal resource.

Chatfield Reservoir currently consists of four storage areas referred to as pools (i.e., inactive/sediment storage, multipurpose-conservation, flood control, and maximum surcharge/spillway design flood pools) that are used for different purposes. These pools are discussed in detail in Chapter 2 of the FR/EIS. The Proposed Action would reallocate storage from

the flood control pool to the joint flood control-conservation pool. Space in the joint flood control-conservation pool would be filled using water rights belonging to a consortium of water providers listed in Table 1. This reallocation would enable the water providers to supply water to local users for municipal, industrial, agricultural, recreational, and fish and wildlife needs in response to population growth in the Denver metropolitan area.

**Table 1. Colorado Water Providers Requesting Storage Space in Chatfield Reservoir**

Entity Requesting Storage	Nature of Entity	Purpose of Use of Storage	Maximum Storage Reallocation (acre-feet)	Percent of Costs and Storage Reallocation
<b>Downstream Water Providers</b>				
City of Aurora	Municipality	Municipal and Industrial <sup>2</sup>	3,561	17.3
City of Brighton	Municipality	Municipal and Industrial	1,425	6.9
Central Colorado Water Conservancy District (WCD)	Agricultural	Agricultural	2,849	13.8
Colorado State Parks	Governmental: State Agency	Recreation	1,000	4.9
Denver Botanic Gardens at Chatfield	Governmental: City and County of Denver	Recreation and Agriculture	40	0.2
Western Mutual Ditch Company	Agricultural	Agricultural	1,425	6.9
<b>Upstream Water Providers</b>				
Castle Pines Metropolitan District <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	660.58	3.2
Castle Pines North Metropolitan District <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	822.58	4.0
Centennial Water and Sanitation District (WSD) <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	5,253.95	25.5
Center of Colorado WCD	Governmental: Park County	Municipal and Industrial	131.32	0.6
Mount Carbon Metropolitan District <sup>1</sup>	Local government serving Denver suburban area	Municipal and Industrial	400	1.9
Perry Park Country Club <sup>1</sup>	Private	Municipal	100	0.5
Roxborough WSD <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	500	2.4
Other South Metro Water Supply Authority (SMWSA) <sup>3</sup>	Local governments providing water supplies to Denver suburbs	Municipal and Industrial	1,418.42	6.9
Town of Castle Rock <sup>3</sup>	Municipality	Municipal and Industrial	1,013.16	4.9
<b>Total</b>			<b>20,600</b>	<b>100%</b>

<sup>1</sup> The City of Brighton, Mount Carbon Metropolitan District, and Perry Park Country Club have given written notice to CWCB (March 22, 2010, August 27, 2010, and April 8, 2011, respectively) of their intent to surrender their allocations and withdraw from the Chatfield study. Information pertaining to the reassignment of their allocations will be provided when available. The occurrences of the City of Brighton, Mount Carbon Metropolitan District, and Perry Park Country Club are highlighted in yellow as a place-holder for these changes.

<sup>2</sup> Municipal and Industrial uses may include domestic, mechanical, manufacturing, and industrial uses; power generation; fire protection; sewage treatment; street sprinkling; irrigation of parks, lawns, gardens, and grounds; and augmentation and replacement, recharge, use as a substitute water supply, and exchange for water supplies also dedicated to these types of uses.

<sup>3</sup> The SMWSA includes the following nine local-government water providers that are participants in the Chatfield Reservoir storage reallocation study: Arapahoe County Water and Wastewater Authority, Castle Pines Metropolitan District, Castle Pines North Metropolitan District, Town of Castle Rock, Centennial WSD, Cottonwood WSD, Roxborough WSD, Stonegate Village Metropolitan District, and Denver Southeast Suburban Water and Sanitation District (doing business as Pinery Water and Wastewater District).

While water supply remains primarily a non-federal responsibility, based on current federal authorities, the federal government should participate and cooperate with states and local interests in developing such water supplies in connection with multi-purpose projects. The federally owned Chatfield Reservoir provides an opportunity to help local communities meet the growing demand for water. Although Chatfield Reservoir does provide promise to help meet a portion of the local need, it does not preclude the consideration of all potential alternatives to solve the problems and meet the needs. Therefore, it is the purpose of the FR/EIS study to identify alternatives, compare those alternatives, and select the best alternative for meeting the needs based on solid planning principals. The Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs) (U.S. Water Resources Council 1983) establish the standards and procedures that USACE and other federal water resources agencies use for planning and evaluating the merits of water projects.

### **3.0 Action Area**

Chatfield Reservoir is located at the confluence of the South Platte River and Plum Creek within the South Platte River Basin. The reservoir itself is located southwest of Denver in Douglas, Jefferson, and Arapahoe Counties. The drainage area for the South Platte River Basin upstream of the reservoir encompasses 3,018 square miles and originates at the headwaters of the North Fork of the South Platte and the South Fork of the South Platte in Park County, Colorado. The U.S. Forest Service (USFS) manages most of the lands along the main stem of the South Platte River upstream of the reservoir. Plum Creek, the second largest of the reservoir's tributaries, flows through a mixture of rangelands and suburban areas. The Buffalo Creek and Hayman fires burned large areas within the South Platte Watershed, resulting in the deposition of sediments into the South Platte River drainage. Reservoirs located upstream of Chatfield include Strontia Springs, Cheeseman Lake, Elevenmile Canyon, Spinney Mountain, and Antero Reservoir. Downstream, the South Platte River joins with the North Platte River in western Nebraska to form the Platte River. The Platte River ultimately joins the Missouri River at the Nebraska/Iowa border.

The Chatfield Reservoir study area (Figure 1) defined for analyzing the effects of the Proposed Action encompasses Chatfield Reservoir and the USACE property (approximately 5,300 acres) surrounding the reservoir, including Chatfield State Park and extends downstream along the South Platte River to where the river intersects the Adams/Weld County line (Figure 1). It includes those portions of the South Platte River, Plum Creek, Deer Creek, Willow Creek, and Massey Draw from the points where they enter USACE property to their confluence with Chatfield Reservoir. Chatfield Reservoir and the surrounding USACE property occupies portions of Jefferson and Douglas Counties, and the study area's downstream reach of the South Platte River crosses portions of Arapahoe, Denver, and Adams Counties.

The Proposed Action would require a change in the operations of the reservoir and would require the construction of additional recreational infrastructure and relocation of some of the existing park roads and facilities. The land affected by construction and operation of the project would be land immediately around Chatfield Reservoir.

Water providers would be able to use existing infrastructure to divert their portion of the stored water into their water systems, and therefore providers would not need to construct new delivery facilities to deliver their new water supplies from Chatfield Reservoir.

Operations at Chatfield Reservoir would be based on the four pools described for the Proposed Action. The base elevation of the flood control pool would be raised from 5,432 ft to 5,444 feet msl, and the State Engineer would be responsible for managing discharges for water levels within the joint flood control-conservation pool. During forecast high runoff years when Chatfield pool elevation is forecast to exceed 5,444 feet, USACE and the state of Colorado would jointly operate the joint flood control-conservation pool. During the joint operation, Chatfield Reservoir could be drawn down while the surface elevations are still within the joint flood control-conservation pool to accommodate the anticipated high volume of runoff. This would provide benefits during high runoff years such as a lower maximum release resulting in less downstream impacts and possibly fewer in-pool impacts because of less need for exclusive flood control storage. These operations are detailed in the Water Control Plan, Appendix B of this FR/EIS. As under current conditions, USACE would take control of discharges once the water level reached the exclusive flood control pool elevation, in this case 5,444 feet msl. The pool elevation of 5,444 feet msl would not be achieved every year due to fluctuations in the amount of upstream runoff.

Under the proposed action the number of entities with storage rights within the reservoir would increase from 1 (Denver Water) to 16 (see Table 1 for the proposed new users). While the state engineer would continue to manage the discharge within the joint flood control-conservation pool, the demand on the additional storage rights would change the volume and pattern of the discharge from that observed under current conditions. The result is that the pool level could fluctuate more widely than under current conditions.

## **4.0 Federally-Listed Threatened, Endangered, and Candidate Species Potentially Affected by the Proposed Action**

### **4.1 Biological Assessment Process**

This BA addresses T&E species and their habitats that are known to occur or could possibly occur in the Chatfield Reservoir study area (as described in Section 3.0).. T&E species lists from USFWS were used to identify the species to be considered in this BA (USFWS 2010a).

USFWS has determined that historical and new depletions to the Platte River may adversely affect, but would not likely jeopardize federally-listed species and their designated critical habitat along the Platte River in Nebraska. A separate program BA process, the Platte River Recovery Implementation Program (PRRIP), addresses T&E species associated with the central and lower Platte River in Nebraska and is included as an Attachment to this BA (see “PRRIP BA”, Attachment 1). The “target species” addressed under the PRRIP are the whooping crane (*Grus americana*) (and its designated critical habitat), the interior least tern (*Sternula antillarum*), the northern Great Plains population of the piping plover (*Charadrius melodus*), and the pallid sturgeon (*Scaphirhynchus albus*). The PRRIP also addresses the western prairie fringed orchid (*Platanthera praeclara*), the American burying beetle (*Nicrophorus americanus*) and the Eskimo curlew (*Numenius borealis*). The PRRIP was established in 2006 to protect and recover the federally-listed Platte River species and to offset the depletive effects of existing and new water related activities in Colorado and the other basin states. The PRRIP is implemented through a basin-wide cooperative approach agreed to by the States of Colorado, Nebraska, Wyoming, and the U.S. Department of the Interior. In Colorado, individual water projects, such as the Chatfield Reservoir reallocation project, may rely on the PRRIP for ESA compliance purposes through the participants’ membership and financial participation in the South Platte Water Related Activities Program, Inc. (SPWRAP) a water provider’s organization. The

SPWRAP assists in fulfilling Colorado's programmatic contributions to the PRRIP. The water providers participating in the Chatfield Reservoir storage reallocation study are all members of SPWRAP. All of the water providers who are planning to remain involved in the study have renewed or are in the process of renewing their memberships for 2011. Copies of the 2011 Certificates of Membership in SPWRAP that have been received to date are included in Attachment A of the PRRIP BA. As indicated in Table 1, City of Brighton, Mount Carbon Metropolitan District, and Perry Park Country Club have given written notice to CWCB of their intent to withdraw from the study.

By agreeing to participate in the PRRIP, proponents of the Chatfield Reservoir storage reallocation project, which is subject to Section 7 ESA consultation, can ensure compliance relative to the Platte River target species, can avoid the potential for prohibited "take" of these species under ESA Section 9, and can take advantage of predefined procedures and expectations going into the ESA consultation process. The PRRIP benefits Platte River species by creating offsetting measures, including measures that will substantially reduce shortages to target flows in the central Platte River, and that will obtain and restore habitat for the target species. Therefore, net impacts to these species are not expected to be significant as a result of depletions from the proposed Chatfield Reservoir storage reallocation project. The potential effects of project depletions on the Platte River T&E species (listed above) are addressed in the streamlined PRRIP BA (Attachment 1) submitted by the federal action agency to USFWS and will be covered through a "tiered" Biological Opinion confirming the project is in compliance with the ESA based on implementation of the PRRIP.

For federal actions and projects participating in the PRRIP, the Platte River Recovery Implementation Program Final Environmental Impact Statement (FEIS) and the June 16, 2006 Programmatic Biological Opinion (PBO) serve as the description of the environmental baseline and environmental consequences for the effects of the Federal actions on the listed target species, whooping crane designated critical habitat, and other listed species associated with the Platte River and addressed in the PBO. These documents are hereby incorporated into this BA by this reference.

## **4.2 Habitat Types in the Study Area**

The Chatfield Reservoir study area includes many different habitat types, such as grasslands, shrublands, open water, rocky areas, landscaped/disturbed areas, and riparian areas. Despite the diversity of habitats and wildlife in the Chatfield Reservoir study area, the habitat quality, especially in uplands is typically degraded by the presence and even dominance of non-native plant species. Increasing the water level of Chatfield Reservoir to 5444 ft msl (as in the Proposed Action) could result in the loss of approximately 586 acres of wildlife habitat from inundation. Table 2 shows the number of acres of each of the habitat types that could be lost. In addition, approximately 2.5 acres of riparian habitat would be lost due to relocation of the recreation trail at the Plum Creek Day Use Area.

A range of vegetation communities exists within the study area, including upland, wetland, and open water communities (Burns and McDonnell 1998). Upland vegetation communities include mixed-grass prairie, woodlands, scrub-shrub, open fields, and pastures. Wetlands include emergent wetlands, riparian shrublands, and riparian cottonwood forest. Open water habitats include streams, rivers, borrow ponds, and reservoirs.

**Table 2. Estimate of Acres of Wildlife Habitats at Chatfield Reservoir Inundated Beyond Current Operations**

Habitat Type	Proposed Action
Mature Cottonwood	43
Other Trees	211
Shrub	53
Upland	222
Wetland/Non-woody	57
Total	586

### 4.3 Species Evaluated

The Proposed Action could have potential impacts on T&E species primarily through inundation of wetland, riparian, and upland areas currently used by T&E species. Table 3 includes a list of T&E species that are known to occur or could occur in the Chatfield Reservoir study area. The list of T&E species in Table 3 was developed from current lists from USFWS, including the County Lists for each of the counties in the study area (USFWS 2010a). The black-footed ferret (*Mustela nigripes*) was not included in Table 3 because it is not on the County Lists and all of the project components are within the 2009 black-footed ferret block- clearance area where USFWS has determined that ferrets are unlikely to occur (USFWS 2009a). Therefore, the black-footed ferret is not further addressed in the BA.

The Platte River T&E species that occur in Nebraska but not in the Chatfield Reservoir study area are addressed under the PRRIP program (Attachment 1) and are not included in this section; this includes the pallid sturgeon, the western prairie fringed orchid, the American burying beetle, and the Eskimo curlew. The whooping crane, interior least tern, and piping plover, are Platte River T&E species that occur in Nebraska and also have the potential to occur in the Chatfield Reservoir study area, therefore these species are discussed in this section, as well as in the PRRIP BA (Attachment 1).

**Table 3. Federal Threatened, Endangered, and Candidate Species Known to Occur or with the Potential to Occur in the Study Area of the Chatfield Reservoir Storage Reallocation Project**

Common Name	Scientific Name	Federal Status
<b>Mammals</b>		
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	C
Canada lynx	<i>Lynx canadensis</i>	T
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	T
<b>Birds</b>		
Interior least tern <sup>1</sup>	<i>Sterna antillarum athalossos</i>	E
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T
Piping plover <sup>1</sup>	<i>Charadrius melodius circumcinctus</i>	T
Whooping crane <sup>1</sup>	<i>Grus americana</i>	E
<b>Fish</b>		
Greenback cutthroat trout	<i>Oncorhynchus clarki stomias</i>	T

**Table 3. Federal Threatened, Endangered, and Candidate Species Known to Occur or with the Potential to Occur in the Study Area of the Chatfield Reservoir Storage Reallocation Project**

Common Name	Scientific Name	Federal Status
<b>Insects</b>		
Pawnee montane skipper	<i>Hesperia leonardus montana</i>	T
<b>Plants</b>		
Colorado butterfly plant	<i>Guara neomexicana</i> ssp. <i>coloradensis</i>	T
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	T

Key: E = Endangered, T = Threatened, C = Candidate for Listing.

<sup>1</sup>Water quality or depletions may affect the species and critical habitat in downstream reaches in Nebraska, therefore this species is also addressed in the PRRIP BA (Attachment 1).

### **4.3.1 Federally-Listed Endangered Species**

#### **4.3.1.1 Interior Least Tern**

Interior least terns were federally-listed as endangered in 1985 (50 Federal Register 21784). They are highly dependent on the presence of dry exposed sandbars and favorable river flows that support a forage fish supply and isolate the sandbars from the riverbanks. Characteristic riverine nesting sites are dry, flat, sparsely vegetated sand and gravel bars within a wide, unobstructed, water-filled river channel. Nests are initiated only after spring and early summer flows recede and dry areas on sandbars are exposed, usually at higher elevations away from the water's edge (NGPC 2005). Following regulation of the Platte River that decreased flows, the establishment of trees and shrubs on the floodplain greatly reduced the habitat for the least tern (Currier et al. 1985). In Nebraska, interior least terns currently breed at the following locations: along the Platte River from its mouth, west to the town of North Platte; along the South Platte River at one or two isolated sites; along the lower reaches of the Niobrara River; along reaches of the Loup and Elkhorn Rivers; and on the unchannelized section of the Missouri River below the Fort Randall and Gavins Point Dams. A few least terns nest on the shoreline of Lake McConaughy on the North Platte River, usually in years when low lake levels expose wide sandy beaches (NGPC 2005). Based on 10 years of observations at Chatfield (1996 to 2006), this species was observed only during July 1998, when a single bird was observed near the marina (Kellner 2006). Although it may be rarely, this species has the potential to occur in the Chatfield Reservoir study area during migration.

#### **4.3.1.2 Whooping Crane**

The whooping crane was federally-listed as endangered in 1970 (35 Federal Register 8495). They migrate through Nebraska twice each year on their way to and from wintering grounds in the Aransas National Wildlife Refuge in Texas to summer grounds on freshwater marshes in Alberta, Canada. The primary migration route through Nebraska is approximately 140 miles wide; the Big Bend Region of the Platte River in Nebraska is an important stopover area (NGPC 2005). This area was designated as critical habitat in 1978 (43 Federal Register 20938).

The occurrence of whooping cranes in Colorado is extremely rare, and they have not been seen in Colorado since 2002 (CDOW 2009b). They have never been reported from Jefferson or Douglas Counties (Andrews and Righter 1992) where Chatfield Reservoir is located. In addition, they have

never been reported at Chatfield Reservoir based on available records (Colorado State Parks 1998, Kellner and Spencer 2006, Kellner 2006). In 1975 an experiment was initiated to establish a flock of whooping cranes that would migrate from Gray's Lake Idaho to Bosque Del Apache National Wildlife Refuge in New Mexico, with stopovers in Colorado's San Luis Valley. Eggs from whooping crane nests in Canada were transferred to sandhill crane nests in Idaho, and the sandhill cranes raised the whooping cranes and taught them the migration route. However, the whooping cranes failed to form pair bonds and had high mortality rates. In 1989 the program was discontinued and no whooping cranes survived in this population (International Crane Foundation 2012).

### **4.3.2 Federally-Listed Threatened Species**

#### **4.3.2.1 Canada Lynx**

The federally-listed threatened Canada lynx (65 Federal Register 16051) is a medium-sized cat that inhabits boreal forests of northern North America. The principal food of the lynx is snowshoe hare (*Lepus americanus*), which comprises 80 percent of the lynx's diet. In Colorado, lynx habitat includes dense spruce-fir stands in association with rock outcrops and large boulders in the subalpine zone and timberline where lynx use caves, rock crevices, overhanging banks, or hollow logs for denning. The Canada lynx was historically found in high-elevation forested areas in Colorado in the late 1800s; by 1930, however, they were considered rare. By the mid-1970s, the lynx population in Colorado was extirpated or reduced to a few animals. In 1999, CDOW began a reintroduction program using lynx from Alaska and Canadian provinces for release in the San Juan Mountains of southwestern Colorado. As of 2007, a total of 218 adult lynx have been released in the mountains of Colorado. Most of the lynx released remain in the core release area: New Mexico north to Gunnison, west as far as Taylor Mesa, and east to Monarch Pass. Some movement of lynx into Arizona, Idaho, Iowa, Kansas, Montana, Nebraska, Nevada, New Mexico, South Dakota Utah, and Wyoming has also occurred (CDOW 2008a). Monitoring continues to determine whether Colorado can support sufficient recruitment to offset annual mortality for a viable lynx population over time (Shenk 2008). There is no suitable habitat for the Canada lynx in the Chatfield Reservoir study area.

#### **4.3.2.2 Mexican Spotted Owl**

The federally-listed threatened (58 Federal Register 14248) Mexican spotted owl has been observed in the Pikes Peak, South Platte, and San Carlos Ranger Districts of the Pike National Forest. All nests found in Colorado to date occur on cliff ledges or in caves along canyon walls (USFS 1994). This species occupies either large, steep canyons with exposed cliffs and dense old-growth mixed forest of Douglas-fir, white fir, and ponderosa pine or canyons in pinyon-juniper areas with small and widely scattered patches of mature Douglas-fir. In 2004, USFWS designated 8.6 million acres of critical habitat within the owl's geographic range, including 322,326 acres in Colorado (69 Federal Register 53181). The nearest Critical Habitat Unit (CHU) is located in the southern areas of Douglas and Jefferson counties on land managed by USFS. However, this owl is not expected to occur within the Chatfield Reservoir study area because there is a lack of suitable habitat and the area lies at the edge of the owl's geographic distribution.

#### **4.3.2.3 Piping Plover**

The northern Great Plains breeding population of the piping plover was federally-listed as threatened in 1985 (50 Federal Register 50726). It is found in Nebraska along the Platte River,

preferring riverine island habitat that is largely unvegetated sands, sediments, and gravels (Currier et al. 1985). In Nebraska, the Platte River was included in the critical habitat designated in 2002 (67 Federal Register 57638). This species has been affected through habitat loss by woody plant encroachment as a result of decreased flows in the Platte River (NGPC 2005). An October 11, 2005 court ruling vacated critical habitat for the piping plover in Nebraska; it has been recommended to USFWS for possible rededication (USFWS 2006). In Colorado, piping plovers occur as migrants, arriving around the first of April. Most have passed through by the end of May. They can be found in the eastern part of the state. The Arkansas and South Platte River drainages are the best areas to find these birds. Nesting habitat in Colorado is on sandy lakeshore beaches, sandbars within riverbeds or even sandy wetland pastures. An important aspect of this habitat is that of sparse vegetation (CDOW 2008b). Based on 10 years of observations at Chatfield (1996 to 2006), this species was observed only once (in September 2001) (Kellner 2006). Although it may be rarely, this species has the potential to occur in the Chatfield Reservoir study area during migration as it is attracted to gravelly or sandy shorelines.

#### **4.3.2.4 Pawnee Montane Skipper**

The Pawnee montane skipper (*Hesperia leonardus montana*) was federally-listed as a threatened species in 1987 (52 Fed. Reg. 36176 (September 25, 1987)). The Pawnee montane skipper (skipper) is a small brownish-yellow butterfly with a wingspan slightly more than 1 inch. It inhabits dry, open ponderosa pine woodlands with sparse understory at 6,000 to 7,500 feet msl with moderately steep slopes and soils derived from Pikes Peak granite. Blue grama grass (*Bouteloua gracilis*), the larval food plant, and the prairie gayfeather (*Liatris punctata*), the primary nectar plant, are two necessary components of the ground cover. Small clumps of blue grama occur throughout the warm, open slopes inhabited by skippers. Prairie gayfeather occurs throughout the ponderosa pine woodlands. The vegetative community preferred by the skipper is a northernmost extension of the Ponderosa pine/blue grama grass habitat type documented from southern Colorado and northern New Mexico. However, the preferred nectar plant of the skipper, prairie gayfeather, does not occur in similar habitats to the south. The northeastern limit of the Ponderosa pine/blue grama grass community overlapping the southwestern limit of the prairie gayfeather may contribute to the maintenance of the species in this limited area. The recovery plan for the skipper (USFWS 1998a) established the following recovery criteria: 1) protect and maintain through proper vegetation management all of the defined skipper habitat on public land in the South Platte River drainage, 2) avoid habitat fragmentation, and 3) ensure that skippers are distributed throughout the range.

The Pawnee montane skipper occurs only on the Pikes Peak Granite Formation in the South Platte River drainage system in Colorado, involving portions of Jefferson, Douglas, Teller, and Park counties. An intensive distribution survey found the range of the skipper to be centered at Deckers, Colorado, and to extend northwest just beyond Pine, Colorado, and southward to the point where the Teller, Park, Jefferson, and Douglas county lines nearly converge (USFWS 1998a). This total area is roughly 23 miles long and 5 miles wide. The total known habitat within this range is estimated to be 37.9 square miles. Based on this habitat and distribution information, the Pawnee montane skipper is not expected to occur in the Chatfield Reservoir study area.

#### **4.3.2.5 Greenback Cutthroat Trout**

The historical range of the federally-listed threatened greenback cutthroat trout (43 Federal Register 16343) includes much of the South Platte River drainage from its headwaters to the confluence with the Cache la Poudre River just upstream from Greeley, Colorado, and the headwaters of the Arkansas River upstream from Pueblo, Colorado. However, current distribution is limited to a few streams and lakes in the upper headwaters of these drainages. These sites are not currently within the Chatfield Reservoir study area or under project influences (USFWS 1998b). Introduction of nonnative trout species was the primary reason for the species' decline, but habitat degradation and over harvesting also contributed to the decline. Habitat requirements include clear, cold streams and lakes, and clean gravel in flowing streams during spring for spawning. The objective of the 1998 greenback cutthroat trout recovery plan included actions intended to allow removal of the species from the threatened list, which was to be accomplished by establishing 20 stable populations of this species. All areas identified in the 1998 plan for locating these 20 populations are in headwater areas of the South Platte and Arkansas River drainages, far upstream from the current Chatfield Reservoir study area (USFWS 1998b). Currently, greenback cutthroat trout occur in 58 lakes and streams and 23 of these water bodies meet the population criteria required by recovery goals. Many of the historic and restored populations are located in Rocky Mountain National Park (CDOW 2005b). None of the known populations occur within the Chatfield Reservoir study area or nearby (USFWS 1998b).

#### **4.3.2.6 Colorado Butterfly Plant**

The federally-listed threatened Colorado butterfly plant (65 Federal Register 62302) is endemic to southeastern Wyoming, western Nebraska, and northeastern Colorado, including Boulder, Douglas, Larimer, and Weld counties in Colorado (Spackman et al. 1997). This short-lived, perennial herb grows in moist soils in mesic or wet meadows of floodplain areas at elevations of 5,800 to 6,200 feet msl. The Colorado butterfly plant is found in low depressions along wide meandering streams at the interface between riparian meadows and dry grassland. In January 2005, USFWS designated 3,538 acres of critical habitat along approximately 50 stream miles within Platte and Laramie counties in Wyoming (70 Federal Register 1940).

Threats to this species include the use of broadleaf herbicides, grazing by cattle and horses, conversion of land for agriculture, and water development. Potential habitat is present within the Chatfield Reservoir study area. The transition zone between wetland communities and upland communities is where potential habitat for the Colorado butterfly plant occurs (USACE 2006). In 2004 and 2005, five general areas within the Chatfield Reservoir study were identified as potential habitat and were intensively surveyed for the Colorado butterfly plant. No individuals or populations of this species were found (USACE 2005a, 2006).

#### **4.3.2.7 Ute Ladies'-tresses Orchid**

The federally-listed threatened Ute ladies'-tresses orchid (ULTO) (57 Federal Register 2048) has limited distribution in the western U.S., including five counties in Colorado's front range (Jefferson, Boulder, El Paso, Larimer, and Weld counties) (Fertig et al. 2005). It is not currently reported from any locations along the South Platte River (Fertig et al. 2005). This orchid is found in seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated flood plains below 6,500 feet msl. Potential habitat for the Ute ladies'-tresses orchid, as outlined in

USFWS guidelines (USFWS 2007a), includes areas with moist soil conditions and wetland-type vegetation or drier areas where there are indications of seasonally high water tables or inundation. Typical sites include old stream channels, abandoned meanders, alluvial terraces, sub-irrigated meadows, and other sites where soils are saturated to within 18 inches of the surface, at least temporarily, during the spring and summer growing season (USFS 1994).

On October 12, 2004, USFWS announced the initiation of a 5-year review to assess the orchid's population abundance and distribution, recovery progress, and existing threats. Upon conclusion of the status review, USFWS will issue a finding regarding whether the orchid should remain listed or should be proposed for delisting (69 Federal Register 60605).

In a 1998 survey, five wetland areas around Chatfield Reservoir were considered to be potential Ute ladies'-tresses orchid habitat. All sites were surveyed for the orchid and no individuals or populations were found (Burns and McDonnell 1998). In 2004, six general areas were identified as potential orchid habitat around Chatfield Reservoir. These sites were surveyed and no individuals or populations were found (USACE 2005a). The surveys were conducted again in August 2005, and although potential habitat exists within the Chatfield Reservoir study area, no Ute ladies'-tresses orchid plants were found (USACE 2006).

#### **4.3.2.8 Preble's Meadow Jumping Mouse**

This mouse is a rare subspecies of the meadow jumping mouse (*Zapus hudsonius*) and was listed as a federally-listed threatened species in 1998 (63 Federal Register 26517). In February 2005, USFWS was petitioned to delist the Preble's mouse. On November 1, 2007, USFWS revised their proposed rule to amend the listing of the Preble's mouse to specify over what range the subspecies is threatened. Also noted, is the finding that the Preble's mouse (*Zapus hudsonius preblei*) is a valid subspecies and remains federally protected. On July 10, 2008, USFWS removed ESA protections for Preble's mouse populations in Wyoming and amended the listing for Preble's mouse to indicate the subspecies remains protected as a threatened species in the Colorado portion of its range. USFWS has determined the best commercial and scientific information available demonstrates that the Preble's mouse is a valid subspecies and should not be removed from the list of threatened and endangered species based on taxonomic revision (USFWS 2009b).

In June 2003, USFWS designated critical habitat (68 Federal Register 37275-37332) for the mouse along 359 stream miles in Colorado and Wyoming. USFWS has designated approximately 297.3 acres of Preble's mouse critical habitat within the Chatfield Reservoir study area along the South Platte River upstream of Chatfield Reservoir (see Section 5.2 for additional details). This critical habitat falls within the Upper South Platte critical habitat unit (CHU). The approximately 297.3 acres of critical habitat are a subset of the 552 acres of potential Preble's habitat found within the Chatfield Reservoir study area. Critical habitat is defined by USFWS (68 Federal Register 37275-37332a) as extending 140 meters (460 feet) outward from normal high water on both sides of the South Platte River above Chatfield Reservoir.

In December 2010, USFWS designated revised critical habitat for Preble's mouse in Colorado. The revised critical habitat included a total of approximately 411 miles of rivers and streams and 34,935 acres within Boulder, Broomfield, Douglas, El Paso, Jefferson, Larimer, and Teller Counties (75 Fed. Reg. 78430 (December 15, 2010)). Unit 9 "West Plum Creek" (i.e., West Plum Creek CHU),

was one of the critical habitat areas added in 2010, and it includes much of the Plum Creek/West Plum Creek Watershed (75 Fed. Reg. 78430). Unit 9 consists of 90.3 miles of streams. Plum Creek from Chatfield Lake upstream to its confluence with East Plum Creek and West Plum Creek is included in Unit 9, with the exception of 0.14 miles of Plum Creek at the Highline Canal crossing. Critical habitat on Plum Creek extends outward 140 meters from each side of the stream (75 Fed. Reg. 78430).

Preble's mouse habitat is comprised of well-developed plains riparian woodland and wetland areas with adjacent, relatively undisturbed grassland communities and a nearby water source. These riparian areas include a relatively dense combination of grasses, forbs, and shrubs. Preble's mice are known to regularly range outward into adjacent uplands to feed and hibernate. The Preble's mouse is found in and near shrub-dominated riparian (streamside) areas along Colorado's Front Range from Colorado Springs north into southeastern Wyoming. It hibernates from September or October until May. Preble's mouse occupied range (those areas where Preble's mice are known or very likely to occur) (NDIS 2006) within the Chatfield Reservoir study area is illustrated in Figure 2.

The primary constituent elements (PCEs) for Preble's mouse include (75 Fed. Reg. 78430):

- riparian corridors: (A) Formed and maintained by normal, dynamic, geomorphological, and hydrological processes that create and maintain river and stream channels, floodplains, and floodplain benches and that promote patterns of vegetation favorable to the Preble's meadow jumping mouse; (B) Containing dens, riparian vegetation consisting of grasses, forbs, or shrubs, or any combination thereof, in areas along rivers and streams that normally provide open water through the Preble's meadow jumping mouse's active season; and (C) Including specific movement corridors that provide connectivity between and within populations. This may include river and stream reaches with minimal vegetative cover or that are armored for erosion control; travel ways beneath bridges, through culverts, along canals and ditches, and other areas that have experienced substantial human alteration or disturbance.; and
- additional adjacent floodplain and upland habitat with limited human disturbance (including hayed fields, grazed pasture, other agricultural lands that are not plowed or disked regularly, areas that have been restored after past aggregate extraction, areas supporting recreation trails, and urban-wildland interfaces).

These primary constituent elements can be found within the Chatfield Reservoir study area.

In 1998, Preble's mouse surveys were conducted on USACE property in the area surrounding Chatfield Reservoir. The mouse was captured above the reservoir from survey transects on the South Platte River and Plum Creek. There were four captures along the South Platte River and nine captures along Plum Creek. Because the survey was conducted over multiple consecutive nights and individuals were not marked after capture, these captures could have included individuals that had been trapped multiple times. It is expected that the mouse populations in these areas extend beyond the survey area. Elevation of the South Platte River site was 5,440 feet msl and the elevation for the Plum Creek site was 5,460 feet msl (Burns and McDonnell 1998). No Preble's mice have been captured in the Chatfield Reservoir study area below Chatfield Reservoir or along Deer Creek (Burns and McDonnell 1998, 2001).

A Preble's mouse habitat map was developed by Tetra Tech biologists for areas on Plum Creek and the South Platte River above Chatfield that could be inundated by the Proposed Action. The map identified four broad categories of habitat quality; these are shown in Figure 3 and defined as follows:

**High Value Riparian Areas**—stream-side habitats within the floodplain that contain dense stands of vegetation, spatially arranged in multiple strata, such as herbaceous ground cover, riparian shrub layers, and multiple-age-class tree layers.

**Low Value Riparian Areas**—stream-side habitats with limited vegetative cover. This includes mid-successional riparian forest lacking a shrub or grass/forb understory or recently inundated areas that may support vegetation but not enough to provide dense cover.

**Upland Habitat**—dense mesic grasslands, shrublands, or combinations of both, adjacent to riparian areas. Uplands may be part of the floodplain or extend beyond the floodplain up to 300 feet.

**Non-habitat Areas**—includes roads, buildings, parking lots, and other human-altered features not considered habitat for the Preble's mouse.

Potential habitat below Chatfield reservoir has been disqualified by USFWS by a block-clearance of the Denver Urban Drainage and Flood Control District (USFWS 2004). The clearance did not originally include South Platte Park and areas below the Chatfield Dam. USFWS has updated their Denver Urban Drainage and Flood Control District Block-Clearance to include the area of South Platte Park south to Colorado State Highway C-470 (USFWS 2007b). Given the heavy recreational use in the Chatfield Reservoir study area below Chatfield Reservoir, this portion of the Chatfield Reservoir study area should not be considered as potential habitat for the Preble's mouse.

### **4.3.3 Federal Candidate Species**

#### **4.3.3.1 Gunnison's Prairie Dog**

On February 5, 2008, the U.S. Fish and Wildlife Service found that the Gunnison's prairie dog (*Cynomys gunnisoni*) is not threatened or endangered throughout all of its range but the portion of the current range of the species located in central and south-central Colorado and north-central New Mexico is warranted for listing under the Act (50 Federal Register Part 17). Consideration will be given to listing this species once USFWS' priorities allow making the Gunnison's prairie dog a candidate species. Listing of this species is currently prohibited due to higher priority species that need be listed first. The Gunnison's prairie dog has been given a listing priority number (LPN) of 2 because the threats facing the species are of a high magnitude and are imminent.

The Gunnison's prairie dog is dependent on burrows for protection from predators, for refuge for having and rearing young, and as a hibernacula (Burns et al. 1989). Thus, they need well-drained soils for making these burrows. They live in grasslands and semidesert and montane shrublands. Their diet consists of grasses and sedges (Fitzgerald et al. 1998). They inhabit flat to gently rolling areas.

The range of the Gunnison's prairie dog is considered to occur in two separate portions which are referred to as montane and prairie. Occupancy has been found to be higher in the prairie portions of

the range as opposed to the montane portions in Colorado. This species has been deeply affected by both plague and poisoning. According to Fitzgerald et al. (1998) this species may occur in Douglas, El Paso, and Jefferson counties. However, according to a more recent report, *“The Draft Colorado Gunnison’s and White-tailed Prairie Dog Conservation Plan”* (CDOW 2008c), the range nearest the Chatfield Reservoir study area, which is the Southeast population, does not enter into Douglas or Jefferson Counties. Thus, the Gunnison’s prairie dog is not expected to occur in the Chatfield Reservoir study area.

## **5.0 Effects Analysis**

### **5.1 Project Operations**

To better understand the potential impacts of the Proposed Action on T&E species the following important aspects of the project are discussed in this section:

1. Actions to prepare the project area before inundation occurs—tree removal and relocation of road and recreation facilities;
2. Estimated pool levels during average years during the growing season, both seasonally and from year to year including range of variability; and
3. Estimated pool levels during flood years that may raise levels above 5,444 feet msl

Pool elevations were estimated from USACE’s hydrologic modeling, based on historical flow and precipitation data for the Period of Record (POR) of 1942 to 2000 (see the FR/EIS and Appendix H for additional details). The modeling assumes that conditions of the past (i.e., POR) can predict conditions in the future. The modeling does not take into account climate change, which may result in altered hydrologic conditions such as more floods and more or longer periods of drought that cannot be accurately predicted at this time. In addition, the inflows during the entire POR tend to be greater on average than those expected during future conditions. This results in over estimation of impacts and a greater probability of adequate mitigation for all types of inundation-related environmental impacts.

Adverse impacts under the Proposed Action include converting hundreds of acres of terrestrial habitats to aquatic or semi-aquatic habitats, and converting a substantial acreage of wetlands to deepwater habitats. These changes would likely benefit reservoir fisheries, but would negatively impact terrestrial wildlife species. These impacts may include direct loss of life (drowning) and reduction in the overall acreage of wildlife habitat within the Chatfield Reservoir study area. Habitat loss would include reduction in elements such as available forage, protective cover, breeding sites, and nesting sites.

The Proposed Action includes the removal of most trees between the elevations of 5,432 to 5,439 feet msl prior to inundation of this area. As described in the Tree Management Plan (Appendix Z in this FR/EIS), selected trees would be left in place to provide habitat for fisheries and wildlife. In addition, some of the cut trees could be moved to elevations above 5444 ft msl to provide downed woody debris for enhancement of Preble’s mouse habitat. Based on the reservoir modeling results, trees above 5439 ft msl are less likely to be killed by inundation than trees at lower elevations. Because there is uncertainty of the impacts of trees above 5439 ft msl, an adaptive management

approach would be used to monitor the condition of these trees after the pool level is increased, and trees would be removed as needed for safety reasons.

The relocation of roads and recreation facilities in the park would have some impacts on riparian, wetland, and upland habitats. Upland impacts would be primarily associated with borrow areas and temporary haul roads and these impacts would be temporary and would be mitigated by restoring native vegetation to these areas, as described in the Compensatory Mitigation Plan (CMP) (Appendix K of this FR/EIS). Cut and fill impacts to wetlands from the Recreation Modifications would be approximately 6.3 acres (as described in the 404(b)(1) Analysis, Appendix W of this FR/EIS). Riparian and wetland impacts would be mitigated as part of the CMP.

The average pool level on an annual basis would be subject to seasonal fluctuations of up to 21 feet, although annual fluctuations of 6 to 7 feet would be typical. To evaluate potential impacts to T&E species, it is useful to look at fluctuations during the growing season and also useful to look at fluctuations when hibernators are active or dormant and when migratory animals are present or absent. The vegetation growing season corresponds roughly to beginning at week 17 and ending at week 41 (i.e., April 25 to October 11) and corresponds to a growing season of approximately 170 days. During an average year, as modeled using POR data, pool levels would begin to increase prior to the onset of the growing season until reaching the peak during weeks 19 or 20, soon after the growing season starts. Since this increase in pool elevation would overlap with the hibernation of the Preble's mouse (approximately September 30 to May 1), this would have an impact to the Preble's mouse.

Then pool levels would recede modestly (2 to 3 feet) for a major portion of the growing season, leveling off toward the end of the growing season and for the remainder of the year (Figure 4). Within the growing season, the POR data predict that the pool level during an average year would approximate 5,440 feet msl with fluctuations equal to  $\pm 2$  feet (Figure 5). Pool levels during the majority of the growing season may also be influenced by reservoir management. During the recreation season (Memorial Day to Labor Day) pool level variations are currently restricted and restrictions may continue under the Proposed Action. This would aid in maintaining pool levels during the majority of the growing season.

Outside of the growing season, pool levels would continue to decrease during average years to elevations approximating 5,436 feet msl in a typical year (Figure 4). The modeling of average pool levels reveals that the target pool elevation of 5,444 feet msl may not be attained in a typical year. Therefore, a portion of the habitat acres listed in Table 2 would typically not be inundated, or at least inundated for only short periods of time. If vegetation, including trees, were not removed within a specific zone, for example a zone of approximately 5,440 feet msl (the estimated average pool level during a typical growing season) to 5,444 feet msl (target pool elevation), then the vegetation within this zone would remain and possibly transform from terrestrial habitats to wetter environments instead of being completely eliminated. This could occur naturally through succession by decreasing or eliminating woody vegetation (trees and shrubs) and encouraging the growth of water-tolerant vegetation including wetland plants. As trees die and decay, they would provide habitat by creating downed woody debris which the Preble's mouse may use. These snags and surviving trees would also be close to the shoreline of the 5,444 msl target pool elevation, thereby lessening potential impacts to boater safety.

An understanding of what may happen to pool levels during flood years and drought years is needed to further characterize potential impacts on T&E species. Figure 6 presents POR modeling showing pool elevations per year over the POR. Chatfield Reservoir's flood control function would result in periodic rises in water levels above the target pool elevation. Compared to current conditions, flooding occurs with the same frequency over the POR and of similar duration for each event. However, the pool elevations reached during the peak of an event is higher for the Proposed Action, and therefore floods a larger area. Adverse impacts on vegetation would be minimal because the flooding, especially at the highest elevations, is for a short duration (several days). Modeling of maximum levels using the POR water levels illustrate that fluctuations in maximum water elevations from year to year can be more than the average fluctuations and on extremely rare occasions can change more than 20 feet for extended durations. For example, the largest modeled flood event was for 1942 where the maximum pool elevation was greater than 5,465 feet msl, and flooding above 5,444 feet msl lasted for 40 days. This extreme flood event shows the variability of possible events. A flood of this magnitude would alter vegetation regardless of what pool levels are allowed. By reviewing Figure 6, flooding predicted over the POR at the new pool elevation of 5,444 feet msl would have occurred during 6 out of 59 years (10 percent). The duration of these flood events ranges widely from 30 to 40 days for the largest floods to 5 to 10 days for the more moderate floods. Currently, flooding along the South Platte River is dampened by the reservoirs upstream constructed in the 1970s. Although not quantified, the influence of the upstream reservoirs further lessens the probability of flooding along the South Platte River. Any diversions along Plum Creek likely dampen flooding on this drainage as well.

During drier years, pool levels can fall below the predicted average pool level of 5,440 feet msl and much lower than the target pool level of 5,444 feet msl. However, the frequency of these drier years occurs only as frequently as flood years (about 10 percent of the time; Figure 6). Therefore, the majority of the time (roughly 80 percent on average) the pool levels are at an average level, about 5,440 feet msl during the growing season (and therefore during the wildlife breeding season and the Preble's mouse active season). Pool levels maintained at this elevation would help to stabilize vegetation above 5,444 feet msl and provide consistent habitat within a margin area of approximately  $\pm 2$  feet at the average pool level of 5,440 feet msl.

Under the Proposed Action, the Chatfield Reservoir level would fluctuate within the year more often and more widely than under current conditions. It is possible that the pool level could fluctuate over a distance of 21 feet under the worst conditions, likely an extended drought. The multipurpose pool level can recede to an elevation of 5,423 feet msl under the Proposed Action, which is the same level as under the current conditions. However, under the Proposed Action, the pool level can rise much more than under current conditions. Although the average peak fluctuation of 3 feet (Figure 7) during late spring or early summer is expected, over an entire year the pool level would have the potential to fluctuate 21 feet. Although the maximum pool elevation under this Proposed Action is predicted to be attained only once every 3–4 years, the minimum levels could reach 5,423 feet msl (Figure 6). According to POR modeling, reservoir levels have the potential of being at this elevation during some part of the year 1 out of every 3 years. Under current conditions, storage capacity is managed in an attempt not to exceed 9 feet of fluctuation annually.

**Upstream impacts**—The potential for secondary impacts from additional conservation storage capacity to flows upstream of the Chatfield Reservoir study area on the South Platte River and Plum

Creek is dependent on whether utilization of storage capacity at Chatfield Reservoir would change the current management of water in these drainages, both by users of the reallocated storage at Chatfield Reservoir and potentially by other entities such as Denver Water. Available inflows to be stored in Chatfield by the water providers would be from both junior water rights and “free river” diversions, which would be exercised when there is available runoff for the taking (“free water”). The reallocation of storage at Chatfield simply enables water to be stored in Chatfield that now flows downstream through and beyond the Chatfield Reservoir study area. If a water provider drops out of the project and relinquishes their rights to the storage space, it is assumed that the water provider acquiring rights to that space would store and release water in the same manner as the original water provider. Under the current understanding of how water providers would access and store water at Chatfield, there are no expected direct or indirect impacts on upstream areas outside of the Chatfield Reservoir study area.

## **5.2 Potential Impacts to Federally-Listed Threatened, Endangered and Candidate Species**

This section discusses the potential impacts to the federally-listed species that were identified in Section 4.3 as known to occur or with the potential to occur in the Chatfield Reservoir study area. The effects determinations for these species are presented in Section 6. As indicated in Section 4.3, potential impacts to the Platte River T&E species that occur in Nebraska are addressed under the PRRIP program (Attachment 1 of this BA).

### **5.2.1 Interior Least Tern**

This species has the potential to occur in the Chatfield Reservoir study area during migration as it is attracted to gravelly or sandy shorelines. Under the Proposed Action there may be an increase in exposed shorelines during dry years and this may be a benefit to migrating interior least terns. The Proposed Action would have no adverse impact to the interior least tern.

### **5.2.2 Whooping Crane**

This species has never been recorded at Chatfield Reservoir and has not been reported in Colorado since 2002. Their presence in this area would be considered part of an accidental migration pattern. Therefore, a change in the target pool elevation to 5,444 feet msl would have no adverse impact to the whooping crane.

### **5.2.3 Canada Lynx**

The Canada lynx has been reintroduced to Colorado in recent years. However, no habitat for the lynx is found in the Chatfield Reservoir study area. Therefore, a change in the target pool elevation to 5,444 feet msl would have no adverse impact on the Canada lynx.

### **5.2.4 Mexican Spotted Owl**

The Mexican spotted owl is found in mature coniferous forest typically in steep mountainous canyons such as those in the Pike-San Isabel National Forest and other forests in the southwest. No habitat for the Mexican spotted owl is found within the Chatfield Reservoir study area. Upstream portions of the South Platte River on National Forest land would not be affected by increased pool elevations at Chatfield. Therefore, there would be no adverse impact to the Mexican spotted owl.

### **5.2.5 Piping Plover**

This species has the potential to occur in the Chatfield Reservoir study area during migration as it is attracted to gravelly or sandy shorelines. Under the Proposed Action there may be an increase in exposed shorelines during dry years and this may be a benefit to migrating piping plovers. The Proposed Action would have no adverse impact to piping plovers.

### **5.2.6 Pawnee Montane Skipper**

Pawnee montane skippers inhabit dry, open ponderosa pine woodlands with sparse understory at 6,000 to 7,500 feet msl. Blue grama grass (*Chondrosium gracile*) is the larval food plant. Prairie gayfeather (*Liatris punctata*) is the primary nectar plant. Both of these plant species occur in the Chatfield Reservoir study area. The skipper occurs only on the Pikes Peak Granite Formation in the South Platte River drainage system in Colorado involving portions of Jefferson, Douglas, Teller, and Park counties. The total known habitat within the range is estimated to be 37.9 square miles (98.2 square kilometers). Given the elevation restrictions of its habitat, the skipper does not appear likely to occur in the Chatfield Reservoir study area and therefore would not be adversely impacted by the Proposed Action.

As discussed in Section 5.2.10, offsite mitigation for impacts to Preble's mouse critical habitat in the upper South Platte will occur along Sugar Creek in the Pike National Forest (i.e., Sugar Creek Mitigation Project). The slopes bordering the 4.5-mile reach of Sugar Creek where the compensatory mitigation is proposed to occur have been mapped as skipper habitat (ERT 1986). A component of the Sugar Creek Mitigation Project includes tree thinning by hand on about five acres of slopes that are adjacent to Sugar Creek. The tree thinning is proposed to decrease shading of the riparian area and increase the potential of riparian shrubs to increase their cover and distribution. The thinning of Ponderosa pine would temporarily disturb habitat for the skipper. However, over the long term, thinning the Ponderosa pine should increase skipper habitat in the thinned areas because the two plant species (blue grama and prairie gayfeather) that the skipper uses tend to increase in openings within the Ponderosa pine forest. Monitoring of thinned Ponderosa pine sites indicates that skipper densities are positively correlated with prairie gayfeather flowering stem densities and that prairie gayfeather stem densities increase in the thinned Ponderosa pine forest sites (Drummond 2008). Monitoring of hand-thinned stands of Ponderosa pine on the Pike National Forest by the USFS indicates that the disturbed understory vegetation in the thinned areas recovers in one to two growing seasons depending on moisture. Over the long term, the selected thinning of the Ponderosa pine forest bordering the 4.5-mile reach of Sugar Creek would improve habitat for the skipper. The proposed mitigation activities are consistent with recovery criteria for the skipper because the activities would not fragment skipper habitat and over the long term would enhance skipper habitat in the Sugar Creek drainage.

### **5.2.7 Greenback Cutthroat Trout**

The greenback cutthroat trout is found only in a few streams and lakes within the headwaters of the South Platte River and Arkansas River systems. None of the known populations occur within the Chatfield Reservoir study area or nearby (USFWS 1998c). In addition, all areas identified in the 1998 recovery plan for establishing stable populations are in headwater areas of the South Platte and Arkansas River drainages, far upstream from the Chatfield Reservoir study area (USFWS 1998c). Therefore, there would be no adverse impact on the greenback cutthroat trout.

### **5.2.8 Colorado Butterfly Plant**

Rare plant surveys for the Colorado butterfly plant were conducted at Chatfield State Park in 2004 and 2005. No individuals of Colorado butterfly plant were found after intensive surveys during the proper survey window. This species has not been documented historically in the Chatfield Reservoir study area. Therefore, the raising of the pool elevation at Chatfield Reservoir would have no adverse impact on the Colorado butterfly plant.

### **5.2.9 Ute Ladies' Tresses Orchid**

Rare plant surveys for the Ute ladies' tresses orchid were conducted at Chatfield State Park in 1998, 2004, and 2005. No Ute ladies'-tresses were found after intensive surveys during the correct time of year when other nearby ULTO populations were in bloom. No Ute ladies'-tresses orchids have been documented from the Chatfield Reservoir study area. Therefore, the raising of the pool elevation at Chatfield Reservoir would have no adverse impact on the Ute ladies' tresses orchid.

### **5.2.10 Preble's Meadow Jumping Mouse**

The proposed increase of the target pool level to 5,444 feet msl would result in potential impacts to approximately 454 acres of Preble's mouse habitat. Table 4 presents the estimated acres of Preble's habitat inundated in the South Platte and Plum Creek drainages. Table 5 presents the estimated acres of critical habitat that would be inundated under the proposed increase in pool elevation. Acres are broken into high and low quality riparian habitat and upland areas. Portions of the potentially affected habitat along the South Platte River and Plum Creek are designated as critical habitat.

The Upper South Platte River critical habitat unit extends from Chatfield Reservoir to Deckers, many miles upstream of Chatfield Reservoir, and contains approximately 3,265 acres on 43.8 miles of river and streams [Upper South Platte CHU (SP13) (FR68(120)37276-37332)]. The Upper South Platte CHU is divided into four subunits of critical habitat along the river and its tributaries. USACE property along the South Platte River above Chatfield Reservoir is designated as the "Chatfield subunit" within the Upper South Platte CHU. The Chatfield subunit contains approximately 297.3 acres of critical habitat. The Proposed Action would inundate approximately 80.0 acres of Preble's mouse critical habitat within the Chatfield subunit (Table 5); this is approximately 27 percent of the area of the subunit.

The West Plum Creek CHU extends upstream from Chatfield Reservoir to include approximately 5,518 acres on 90 miles of streams in the Plum Creek Watershed (75 Fed. Reg. 78430). The Proposed Action would inundate approximately 75.2 acres of critical habitat along 2.8 stream miles of the Plum Creek arm of Chatfield Reservoir in the West Plum Creek CHU (Table 5).

The increased storage under the Proposed Action would affect the Preble's mouse in two ways, directly as water rises and indirectly through the alteration of existing habitat. Initial and subsequent rise in water to the target pool level could, depending on the season and rate of rise, drown hibernating adults or young in maternal nests, or displace individuals as water rises. Preble's mice swim well (Schorr 2001) and it seems unlikely that active adults or self-sufficient young would be drowned. It should be noted that under the current operating conditions of Chatfield Reservoir increases in the pool elevation associated with flooding can have similar direct impacts on Preble's mice. In addition to direct mortality, inundation of Preble's mouse habitat could cause secondary mortality from displacement, reduced population, and increased vulnerability based on a smaller

population. Current population densities within the Chatfield Reservoir study area are unknown at this time, so it is difficult to determine the number of individuals that may be affected by the Proposed Action. During trapping in 1998, nine Preble's mice were captured along Plum Creek and four were captured along the South Platte River (it is uncertain whether recaptures were accounted for during this trapping effort).

**Table 4. Acres of Preble's Mouse Habitat Affected in Each Drainage Under the Proposed Action**

	<b>South Platte River</b>	<b>Plum Creek</b>	<b>Total</b>
	<b>Proposed Action</b>	<b>Proposed Action</b>	<b>Proposed Action</b>
High Value Riparian Habitat (1)	139.0	102.5	241.5
Low Value Riparian Habitat (1)	42.5	35.3	77.8
Upland (1)	95.2	39.3	134.5
<b>Total Acres Affected</b>	<b>276.7</b>	<b>177.1</b>	<b>453.8</b>
Acres of Occupied Range within the Study Area (2)	984.7	779.4	1,764.1
Percentage of Occupied Range within the Study Area Potentially Impacted	28.1%	22.7%	25.7%

Notes:

(1) See Figure 3

(2) See Figure 2

**Table 5. Acres of Preble's Mouse Critical Habitat Affected by the Proposed Action**

<b>Habitat Type</b>	<b>South Platte River</b>	<b>Plum Creek</b>	<b>Total</b>
High Value Riparian Habitat (1)	79.1	44.6	123.7
Low Value Riparian Habitat (1)	0.2	17.9	18.1
Upland (1)	0.7	12.7	13.4
<b>Total Acres Affected</b>	<b>80.0</b>	<b>75.2</b>	<b>155.2</b>
<b>Acres in Critical Habitat Unit (2)</b>	<b>3,265</b>	<b>5,518</b>	<b>8,783</b>
<b>Percent of CHU Acres Affected</b>	<b>2.4%</b>	<b>1.4%</b>	<b>1.8%</b>

Notes:

(1) See Figure 3

(2) Upper South Platte CHU for South Platte River and West Plum Creek CHU for Plum Creek.

Preble's mouse habitat would be affected by direct inundation and by transformation as the new pool levels are established. The inundated acres shown in Tables 4 and 5 assume constant inundation at the target pool elevation, and therefore an estimate of maximum impacts. However, this is not how inundation is likely to occur. As discussed earlier in this section, it is more likely that during a typical year, the water level would be at 5,440  $\pm$  2 feet msl. Vegetation below this level would likely be completely lost but a ring of vegetation above this elevation may be transformed. This may result in a loss of woody vegetation or an increase in understory cover as more water becomes available closer to the surface. Additionally, at the new water level, a zone just below the

area of habitat transformation may still support vegetation, but due to intermittent inundation, the vegetation would be composed of annual plants including good seed producers and weedy species. This also, depending on reservoir management, may positively or negatively impact the Preble's mouse.

Upstream or downstream conditions related to this Proposed Action do not to affect the Preble's mouse. Upstream conditions are thought to remain similar to baseline conditions as discussed previously in this section. Downstream conditions may change slightly, but no Preble's mouse populations are known to exist downstream of Chatfield Reservoir to the Adams-Weld county line.

Offsite mitigation for impacts to Preble's mouse critical habitat in the upper South Platte is proposed to occur along Sugar Creek in the Pike National Forest (i.e., Sugar Creek Mitigation Project; see Sections 5.2.6 and 7.0). The proposed mitigation activities along Sugar Creek would provide long-term sustainable gains in the quality and quantity of Preble's mouse habitat for 4.5 miles of designated critical habitat for Preble's mouse. Implementation of the Sugar Creek Mitigation Project would have some localized short-term adverse effects to Preble's mouse and its habitat associated with construction of structures that would minimize sediment input to Sugar Creek and increase shrub riparian habitat. Table 6 lists the mitigation activities that are proposed to occur along Sugar Creek and potential impacts to Preble's mouse habitat.

**Table 6. Impacts of Mitigation Activities to Preble's Mouse Habitat Along Sugar Creek.**

Mitigation Activity	Estimated Adverse Impact to Preble's Mouse Habitat (in acres)	
	Temporary	Permanent
Replace/install 55 culverts, culvert extensions, and stilling basins	7.35	0.38
Install five small mammal passage culverts	1.39	0.00
Construct six drop structures	3.03	0.21
Tree thinning over 2,800 linear feet (to increase riparian shrubs)	5.00	0.00
Grade and plant disturbed areas to increase riparian vegetation	3.50	0.00
Total	20.27	0.59

The majority of the estimated adverse impacts to Preble's mouse habitat associated with the Sugar Creek mitigation activities would be temporary, but all of the activities would result in improvements to the quantity and/or quality of Preble's designated critical habitat along Sugar Creek. Although short-term adverse effects to Preble's critical habitat would occur, overall there would be a net long-term benefit to the critical habitat. The rationale for this conclusion is as follows:

- Willow cuttings would be taken from live willows for the purpose of willow staking at riparian revegetation sites within the project area. Cutting activities would occur only during the Preble's mouse hibernation period for the Preble's mouse and would occur only by hand. No more than 50 percent of each donor live willow would be harvested and no more than 50 percent of willow plants at the harvest site would be used as donors. Harvest sites would be no larger than 0.5 acres.

- Revegetation work using conventional equipment to reshape sediment deposits or install drop structures to stabilize stream channels would adversely impact less than 1 acre of riparian vegetation over the life of the project, with less than 0.5 acres impacted at any given time.

In conclusion, a change in the target pool elevation to 5,444 feet msl would adversely impact the Preble's mouse habitat within the Chatfield Reservoir study area and adversely modify designated critical habitat along the South Platte River and Plum Creek.

### **5.2.11 Gunnison's Prairie Dog**

The Gunnison's prairie dog is not expected to occur in the Chatfield Reservoir study area and thus would not be affected by the Proposed Action.

## **5.3 Cumulative Effects**

Under the ESA, cumulative effects include the effects of State, tribal, local or private actions that are reasonably certain to occur in the action area in the future. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation under the ESA. If other water-related projects have actions that are permitted under Section 404 of the Clean Water Act these actions would be subject to compliance with Section 7 of the ESA.

Adverse impacts on these species would be mitigated for and there would be no net adverse cumulative effects to federally-listed species. Projects involving water depletions would be required to mitigate those depletions, so there would be no net adverse cumulative effects on T&E species in the central and lower Platte River Valley. Refer to Section 4.19 of the FR/EIS for an evaluation of cumulative impacts from other Federal projects in the area, as well as past or present non-Federal actions.

This section focuses on Preble's mouse because it is the only federally-listed species that is potentially affected by the Proposed Action, based on the preceding analysis in Section 5. Six State, local, and private projects were identified during development of the FR/EIS (Section 4.19) as potential contributors to cumulative effects. These are summarized in Table 7 and discussed below.

**Table 7. Past, Present, and Foreseeable Future Projects Considered As Part of the Cumulative Impacts Analysis**

<b>Project</b>	<b>County</b>	<b>Timeframe</b>	<b>Reference</b>
CDOT Projects: 2030 Metro Vision	Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson	Present/ Reasonably foreseeable future	CDOT - <a href="http://www.drcog.org/index.cfm?page=RegionalTransportationPlan">http://www.drcog.org/index.cfm?page=Regional Transportation Plan</a>
CDOT Projects: C470 Corridor Plan	Jefferson	Present/ Reasonably foreseeable future	CDOT - <a href="http://co.jefferson.co.us/planning/planning_T59_R12.htm">http://co.jefferson.co.us/planning/planning_T59_R12.htm</a>
CDOT Projects: South Jefferson County Community Plan	Jefferson	Present/ Reasonably foreseeable future	CDOT - <a href="http://co.jefferson.co.us/planning/planning_T59_R24.htm">http://co.jefferson.co.us/planning/planning_T59_R24.htm</a>
Gravel Pits	Multiple	Present/ Reasonably foreseeable future	Multiple Water Providers
Residential Development Projects	Douglas, Jefferson	Present/ Reasonably foreseeable future	Multiple Developers - <a href="http://www.douglas.co.us/community/planning/Zoning.html">http://www.douglas.co.us/community/planning/Zoning.html</a>

**Table 7. Past, Present, and Foreseeable Future Projects Considered As Part of the Cumulative Impacts Analysis**

Project	County	Timeframe	Reference
			and <a href="http://www.jeffco.us/planning/">http://www.jeffco.us/planning/</a>
Plum Creek Reservoir	Douglas	Reasonably foreseeable future	Town of Castle Rock, Castle Pines Metropolitan District, and Castle Pines North Metropolitan District

**CDOT Projects: 2030 Metro Vision.** The 2030 Metro Vision Regional Transportation Plan (2030 MVRTP) addresses the challenges and guides the development of a multimodal transportation through 2030. It is an element of the overall Metro Vision 2030 Plan adopted by the Denver Regional Council of Governments (DRCOG). To meet current and future challenges, the 2030 MVRTP includes plans to enhance the relationship between transportation and land use development, provide for maintenance of the existing system, incorporate transportation management actions to increase the existing system's efficiency, include travel demand management efforts to slow the growth of single-occupant vehicle trips, identify transit and roadway improvements to increase the system's people-carrying and freight movement capacity, add bicycle and pedestrian facilities, prioritize improvements considering limited resources, integrate plan components to result in a connected and complete system, encourage coordination between neighboring communities and between agencies, and support the Metro Vision urban center, extent of development, environmental quality, and freestanding community elements.

**CDOT Projects: C-470 Corridor Plan.** A 1999 Jefferson Economic Council (JEC) study revealed that only 4,000 acres of developable commercial and industrial land remained within Jefferson County. The Jefferson County Planning Commission directed JEC and the Planning and Zoning Department to write Land Development Policies to remedy this shortage. Approved policies were incorporated into the county's Policy and Procedures Manual in 2002 by the Board of County Commissioners. In 2001, the Planning Commission and the Board of County Commissioners directed staff to develop a plan for the C-470 corridor to identify and designate locations for employment-generating land uses. Three prime locations for employment-generating land uses along the C-470 corridor were identified: Bowles, Belleview, and Ken-Caryl. The C-470 Corridor Plan is intended to encourage the development of job opportunities along the C-470 corridor to improve the county's jobs-to-population imbalance. This plan provides land use recommendations for office development and smaller-scale retail that would support office development. This plan includes the C-470 area adjacent to Chatfield Reservoir.

**CDOT Projects: South Jefferson County Community Plan.** The South Jefferson County Community Plan is a set of policy recommendations developed for the southeastern portion of Jefferson County. Its purpose is to serve as a guide for land use and service decisions now and in the future. Included in the plan are guidelines for land use activities, including activity centers, arterial intersections, open spaces, trails, parks, utilities and services, and redevelopment to encourage the reuse of existing facilities. In addition, subareas are identified within the plan as areas west of the Hogback and in the rural plains, and guidelines are laid out specific to these areas to maintain their unique character. This plan includes the area around Chatfield Reservoir.

**Gravel Pits.** Approximately 41 gravel pits located north of Denver have been built or are planned to be converted into reservoirs by various Water Providers in the Denver Metro area. About half of

these gravel pits have been built or are under construction, and the remaining half are planned to be built in the future. The gravel pits are or would be located along the South Platte River from Denver to the Adams-Weld County line (i.e., Brighton) and possibly even farther downstream. Based on the available information, the largest gravel pit (Lupton Lake) would hold approximately 11,000 acre-feet of water, and the smallest gravel pit (Tanabe) would hold approximately 700 acre-feet of water. These gravel pits would have pipeline facilities; however, information about these pipelines was not available at the time of the study. Additional details on these reservoirs are located in Section 4.18 of the FR/EIS.

**Residential Development Projects in Jefferson and Douglas Counties.** Residential development is occurring around Chatfield, mostly to the south of the reservoir. This development is removing wildlife habitat by building housing communities in the area. Currently, the open spaces of undeveloped land to the south of the park are ad-hoc wildlife habitats.

The U.S. Census Bureau (2006) data indicate that there are a total of 226,195 housing units in Jefferson County and a total of 95,511 housing units in Douglas County. In 2005, a total of 3,671 housing units were built in Jefferson County, and another 6,902 housing units were built in Douglas County. These data are not site specific, so the locations where the houses were built within each of the counties could not be determined. However, there are some undeveloped properties located near Chatfield that could be developed in the future, as discussed below.

**Jefferson County.** The Jefferson County zoning map identifies a few pockets of open space around Chatfield State Park. The portion of Jefferson County south of C-470 and east of Wadsworth is zoned Agriculture-One Zone District (A-1). The A-1 district is “intended to provide for limited farming, ranching and agriculturally related uses while protecting the surrounding land from any harmful effects. A revision in March 1972 increased the minimum land area for this district to 5 acres. Contained in this section are the allowed land uses, building and lot standards (including minimum setbacks) and other general requirements specified for this zone district” (Zoning Resolution). The Lockheed Martin property is zoned Industrial-One Zone District (I-1). The I-1 district is “intended to provide areas for medium industrial development. Contained in this section are the allowed land uses, building and lot standards (including minimum setbacks) and other general requirements specified for this zone district” (Zoning Resolution). South and west of the Lockheed Martin property, it is zoned Agriculture-Two Zone District (A-2) but there are several small pockets of residential development scattered throughout that area (it appears those subdivision pockets were rezoned). The A-2 district is intended to provide for general farming, ranching, intensive agricultural uses and agriculturally related uses while protecting the surrounding land from any harmful effects. A revision in March 1972 increased the minimum land area for this district to 10 acres. Contained in this section are the allowed land uses, building and lot standards (including minimum setbacks) and other general requirements specified for this zone district” (Zoning Resolution). The Chatfield Green (owned by the City of Littleton) is the subdivision just north of Lockheed Martin on the west side of Wadsworth. It is surrounded by open space. The city of Littleton has numerous subdivisions on the north side of C-470.

**Douglas County.** Everything south of Chatfield State Park is currently zoned, planned, or zoned A-1. North of Titan Road and south of Chatfield State Park, there are several subdivisions. Also, east of Santa Fe Drive, there are multiple subdivisions and industrial areas. There are some planned

(urban and non-urban) developments in these areas too. Industrial developments are abundant along Santa Fe Drive. South of Titan Road and west of Santa Fe Drive, development against the mountain range is planned. The east side of Santa Fe Drive is being developed heavily at this time, down to Castle Rock and I-25.

**Plum Creek Reservoir.** The Town of Castle Rock, Castle Pines Metropolitan District, and Castle Pines North Metropolitan District are considering constructing the “Plum Creek Reservoir” in Douglas County. The proposed location is about 3 miles southeast of Sedalia, CO and is shown in Figure 2-5 of the FR/EIS. The reservoir would have a capacity of 1,200 to 1,700 acre-feet. Studies are being conducted regarding the size and economic feasibility of the reservoir. Castle Pines Metropolitan District and Castle Pines North Metropolitan District jointly have applied for Water Court Decrees allowing storage in Plum Creek Reservoir of existing and applied-for conditional East Plum Creek water rights. The Districts also seek rights of exchange from Chatfield Reservoir to Plum Creek Reservoir and would store recaptured reusable water rights in the Plum Creek Reservoir if the Chatfield Reallocation project were approved. However, the reservoir will be constructed regardless of whether the Chatfield reallocation is approved. Currently, there is not a firm construction schedule, but the parties expect that construction likely will occur within the next five to ten years.

The land development and highway projects described above could include direct and indirect adverse impacts on native vegetation communities and wildlife habitat in locations in the area around Chatfield Reservoir and downstream along the South Platte River to approximately the Adams-Weld County line (i.e., gravel pits). Land development projects must address potential impacts on T&E species and must mitigate for adverse impacts. Activities covered under an incidental take permit would be subject to compliance with Section 10 of the ESA. Furthermore, project activities permitted under Section 404 of the Clean Water Act (impacts on wetlands) also must avoid, minimize, or mitigate wetland impacts and must address federally-listed species under Section 7 of the ESA. Therefore, cumulative impacts on T&E species from land development and the Proposed Action would not adversely affect federally-listed species as impacts would be minimized or mitigated.

No cumulative effects to Preble’s mouse would be expected from land development or other projects downstream of Chatfield Reservoir to approximately the Adams-Weld County line (i.e., Brighton) because this area is not thought to contain Preble’s mouse and is excluded through a block clearance agreement with USFWS (USFWS 2010b). The area covered by the block clearance in the Denver Metro Area is shown in Figure 8.

## **6.0 Effects Determination**

The effects determinations are presented below for each of the federally-listed species evaluated in Section 5.2, and are summarized in Table 8.

### **6.1 Interior Least Tern**

This species has the potential to occur in the Chatfield Reservoir study area during migration as it is attracted to gravelly or sandy shorelines. Increased exposure of shorelines that may potentially occur under this Proposed Action may be a benefit to migrating interior least terns. Therefore, we have

determined that the Proposed Action “may affect, but is not likely to adversely affect” the interior least tern. We request your concurrence with our finding.

## 6.2 Whooping Crane

This species has not been seen in Colorado since 2002 (CDOW 2009b) and has never been reported in the Chatfield Reservoir study area. Therefore, we have determined that there would be “no effect” to the whooping crane or its habitat from the Proposed Action.

## 6.3 Canada Lynx

No habitat for the lynx is found in the Chatfield Reservoir study area. Therefore, we have determined that there would be “no effect” to the Canada lynx or its habitat from the Proposed Action.

## 6.4 Mexican Spotted Owl

No habitat for the Mexican spotted owl is found within the Chatfield Reservoir study area. Upstream portions of the South Platte River on National Forest land (where habitat is found) would not be affected by increased pool elevations at Chatfield. Therefore, we have determined that there would be “no effect” to the Mexican spotted owl or its habitat from the Proposed Action.

**Table 8. Summary of Determination of Effect on Federally-Listed Species**

Species	Status	Determination of Effect
Mammals		
Canada Lynx	T	No effect
Gunnison's Prairie Dog	C	No effects
Preble's Meadow Jumping Mouse	T	May affect, and is likely to adversely affect May affect, and is likely to adversely modify critical habitat
Birds		
Interior Least Tern	E	May affect, but is not likely to adversely affect
Mexican Spotted Owl	T	No effect
Piping Plover	T	May affect, but is not likely to adversely affect
Whooping Crane	E	No effect
Fish		
Greenback Cutthroat Trout	T	No effect
Insects		
Pawnee Montane Skipper	T	No effect
Plants		
Colorado Butterfly Plant	T	No effect
Ute Ladies'-Tresses Orchid	T	No effect

## 6.5 Piping Plover

This species has the potential to occur in the Chatfield Reservoir study area during migration as it is attracted to gravelly or sandy shorelines. Increased exposure of shorelines that may potentially occur under this Proposed Action may be a benefit to migrating piping plovers. Therefore, we have determined that the Proposed Action “may affect, but is not likely to adversely affect” the piping plover or its habitat. We request your concurrence with our finding.

## **6.6 Pawnee Montane Skipper**

Given the elevation restrictions of its habitat, the Pawnee montane skipper does not occur in the Chatfield Reservoir study area. Over the long term, the mitigation activities along Sugar Creek (for Preble's mouse) would improve habitat for the skipper (see Section 5.2.6). The proposed mitigation activities are consistent with recovery criteria for the skipper as they would not fragment skipper habitat and over the long term would enhance skipper habitat in the Sugar Creek drainage. Therefore, we have determined that there would be "no effect" to the Pawnee montane skipper or its habitat from the Proposed Action.

## **6.7 Greenback Cutthroat Trout**

No greenback cutthroat trout are found within the Chatfield Reservoir study area. Furthermore, all of the areas identified in the recovery plan for establishing stable populations are in headwater areas of the South Platte and Arkansas River drainages, far upstream from the Chatfield Reservoir study area. Therefore, we have determined that there would be "no effect" to the greenback cutthroat trout or its habitat from the Proposed Action.

## **6.8 Colorado Butterfly Plant**

Intensive surveys for the Colorado butterfly plant by Tetra Tech personnel in 2004 and 2005 did not result in a documented occurrence of this plant. Concurrence on these studies was provided by USFWS (USFWS 2004b). There are no documented historical occurrences of Colorado butterfly plants from the Chatfield Reservoir study area. Therefore, we have determined that there would be "no effect" to the Colorado butterfly plant or its habitat from the Proposed Action.

## **6.9 Ute Ladies'-Tresses Orchid**

Rare plant surveys for the Ute ladies'-tresses orchid were conducted at Chatfield State Park in 1998 (Burns and McDonnell) and 2004, and 2005 (Tetra Tech) and no populations or individuals were documented. USFWS has concurred with these findings. There are no documented historical occurrences of this plant in the Chatfield Reservoir study area. Therefore, we have determined that there would be "no effect" to the Ute ladies'-tresses orchid or its habitat from the Proposed Action.

## **6.10 Preble's Meadow Jumping Mouse**

The proposed increase of the target pool level to 5,444 feet msl would result in the potential inundation of approximately 454 acres of Preble's mouse habitat, including 80 acres of designated critical habitat in the Upper South Platte CHU and approximately 75.2 acres of critical habitat along Plum Creek in the West Plum Creek CHU. Short-term adverse effects to Preble's critical habitat would occur from the mitigation activities at Sugar Creek, but overall there would be a net long-term benefit to the critical habitat (see Section 5.2.10). Therefore, we have determined that the Proposed Action "may affect, and is likely to adversely affect" the Preble's meadow jumping mouse and "adversely modify" its designated critical habitat. We are thus requesting initiation of formal consultation with USFWS regarding our determinations.

## **6.11 Gunnison's Prairie Dog**

It is believed that the Gunnison's prairie dog has been extirpated from Douglas and Jefferson counties. Therefore, we have determined that there would be "no effect" to the Gunnison's prairie dog or its habitat from the Proposed Action.

## 7.0 Conservation Measures

Under the Proposed Action, impacts to federally protected species by contractors during construction activities at federal projects would be avoided or minimized by specific contract provisions for avoidance and minimization of these impacts. Under the Tree Management Plan (Appendix Z of this FR/EIS), the majority of trees below 5,439 ft msl would be removed prior to inundation. The Plan would be carried out to minimize potential impacts to migratory birds and Preble's mouse. In addition, some of the removed trees would be scattered in Preble's mouse habitat within Chatfield State Park, above 5,444 ft msl, to enhance the habitat for the Preble's mouse. Woody debris has been found to be a component of Preble's mouse high use areas (Trainor et al. 2007). The use of removed trees for this purpose would be reviewed by resource managers at Chatfield to ensure that it is consistent with boater and dam safety.

The U.S. Army Corps of Engineers (Corps) has developed a Compensatory Mitigation Plan (CMP) to address environmental impacts associated with the proposed reallocation of storage at Chatfield Reservoir. This section provides a summary of the main provisions of the CMP pertaining to Preble's mouse (for full details see the CMP, Appendix K of this FR/EIS). The CMP has been developed at a feasibility level and considers the ecological resources that would be adversely affected and presents a plan for compensatory mitigation for the functions and values of resources to be impacted. The FR/EIS identified Preble's mouse habitat, bird habitat, and wetlands as resources of particular concern and warranting specific mitigation strategies for the estimated adverse impacts to those resources. These resources are referred to as the "target environmental resources" in the CMP. The CMP is designed to fully mitigate the adverse impacts to the target environmental resources associated with Alternative 3, should Alternative 3 be approved as proposed in the draft FR/EIS. Implementation of the CMP is intended to offset adverse impacts to Preble's mouse and maintain the functional conservation role of the affected critical habitat units.

The CMP concludes that:

- There are adequate opportunities within the Chatfield Reservoir watershed to mitigate for adverse impacts to the target environmental resources;
- The proposed compensatory mitigation measures would be successfully implemented, and there are mechanisms within the CMP for correcting a mitigation measure if it is not successful; and
- The estimated costs for implementing, managing, and monitoring the proposed mitigation are within the range of feasibility for the Chatfield Water Providers.

The CMP has been developed with substantial input from stakeholders including the U.S. Fish and Wildlife Service (Service), Colorado Division of Wildlife (CDOW), Colorado State Parks, Denver Chapter of the Audubon Society, Sierra Club, South Suburban Parks and Recreation District, and the Chatfield Basin Conservation Network. Representatives from these organizations participated with the Corps and project consultants in a series of five mitigation workgroup meetings between July and December 2008.

The CMP is based on the following conservative assumptions:

- Under the proposed action (Alternative 3) all of the existing target environmental resources would be lost below 5,444 feet msl;
- Under the proposed action (Alternative 3) none of the target environmental resources would reestablish below 5,444 feet msl;
- Only 15 percent of the private land in the off-site target mitigation area would be available for habitat protection or enhancement.

The CMP is ecologically based. The “currency” of the CMP is ecological functional units (EFUs). This ecological functions approach (EFA) was taken because of the substantial geographic overlap in the target environmental resources. The EFUs capture the ecological functions provided by the individual target environmental resources as well as their overlap. To ensure a diversity and balance of mitigation activities, minimum levels of mitigation activities were established for Preble’s mouse, birds, and wetlands that would contribute to meeting the overall goal to replace lost ecological functions and values of Preble’s mouse habitat, bird habitat, and wetlands associated with adverse impacts of reallocation. The terrestrial habitat at Chatfield Reservoir provides shared ecological functions for the target environmental resources. Several existing models that evaluate habitat functions were assessed including Habitat Equivalency Analysis (HEA), Habitat Evaluation Procedures (HEP), and Habitat Suitability Indices (HSI). No existing model is capable of accurately representing the site-specific characteristics of Preble’s mouse and bird resources for the project, therefore, a site-specific approach was developed. The Corps’ National Ecosystem Planning Center of Expertise (ECO-PCX) requested that the modeling associated with Preble’s habitat be evaluated by an independent Preble’s expert. Battelle, a 501(c)(3) nonprofit science and technology organization, was engaged by the Corps to administer the review of the Preble’s modeling. Battelle contracted with Dr. Mark Bakeman of Ensign Technical Services, Inc. to conduct the review. A report was prepared by the Corps to document the model review (USACE 2009) and is included in the CMP as Appendix I. The model has been reviewed and certified by the Corps as part of its Planning Models Improvement Program: Model Certification (USACE 2005b).

To provide an ecologically meaningful assessment of impacts to the overlapping habitats of the target environmental resources, an ecological functioning index (EFI) was developed for each habitat type. The EFI is a unitless measure that rates habitat components for the target environmental resources on a scale of zero to one. The EFIs for the target environmental resource habitat components were multiplied by acres of impacts to determine the number of impacted EFUs for each target environmental resource. For example, if a habitat type has an EFI of 0.5 for Preble’s mouse and 12 acres of the habitat is lost, 6 Preble’s mouse EFUs would be lost. The total number of EFUs impacted is the sum of EFUs provided in the impact area for each target environmental resource.

The CMP establishes quantifiable objectives and maximizes, to the degree practicable, the amount of mitigation that would occur on Corps lands in the vicinity of Chatfield Reservoir (on-site). The CMP provides requirements for monitoring, reporting, and for adaptive management. The CMP specifies:

- The location of the mitigation activities;
- The activities that would occur;

- When the activities would occur;
- The approximate scope of the activities;
- The estimated range of EFUs to be gained; and
- The criteria for determining success of the mitigation activity.

To ensure that the CMP is successfully implemented, it establishes milestones for implementing mitigation activities and meeting the success criteria defined in the CMP. The mitigation milestones are linked to use of the reallocated storage by the Chatfield Water Providers, thus assuring that the mitigation would be accomplished as a prerequisite to proportionate use of the storage reallocation.

The CMP provides a process to proceed from the feasibility level to the detailed level needed to implement the mitigation activity. The CMP would benefit from refinements and would mature over time. The process for refinement of the CMP and adaptive management measures are specified.

It is anticipated that each of the 15 Chatfield Water Providers would enter into a storage contract with the Colorado Water Conservation Board (CWCBC) and would be required to be a member of a nonprofit corporation directed to guide mitigation and which would remain incorporated until all compensatory mitigation obligations have been successfully met. Annual assessments to the membership would be levied to finance compensatory mitigation obligations. Membership could be terminated for failure to pay assessments. Such termination would result in a loss of storage space for the terminated member and a reallocation of storage space and assessments to the remaining membership. The nonprofit corporation may own land, hold conservation easements, and enter into contracts. Mitigation implementation, monitoring, and adaptive management would be overseen by the Project Coordination Team comprised of representatives from the Corps and Colorado Department of Natural Resources (CDNR).

The Proposed Action would inundate approximately 454 acres of Preble's habitat, comprised of approximately 298.6 acres (210 EFUs) of non-critical habitat and approximately 80.0 acres of critical habitat in the Upper South Platte CHU and approximately 75.2 acres of critical habitat on Plum Creek in the West Plum Creek CHU. This maximum impact estimate is conservative because the estimate assumes that all of the target environmental resources below 5,444 ft msl would be lost. The CMP maximizes the amount of mitigation that would occur on-site. Conservation measures for approximately 20 percent of the impacts to the non-critical habitat EFUs would occur on-site, this would require 111 acres of land and would yield an estimated 43 EFUs. Conservation measures for the remaining 167 EFUs of impacts to non-critical habitat would be mitigated off-site. The majority of the off-site conservation measures would occur on private lands in the Plum Creek watershed through the permanent protection, enhancement, and management of riparian habitats and adjoining uplands to benefit the target environmental resources.

Opportunities for on-site critical habitat conservation measures are limited, so most of the conservation measures for loss of Preble's mouse critical habitat on the South Platte River arm would occur off-site on the Pike National Forest. However, within the Upper South Platte CHU there are five proposed on-site compensatory mitigation areas that overlap with designated critical habitat (these are mitigation areas SPR-2, SPR-3, SPR-4, SPR-5, and SPR-7 as described in the CMP). These five areas comprise approximately 17.1 acres. Because most of the conservation measures for impacts to critical habitat would occur in the montane environment of the Pike

National Forest, and not the plains environment in the vicinity of Chatfield Reservoir in which the ecological functions approach and EFUs were developed, impacts and conservation measures for critical habitat in the Upper South Platte CHU is expressed in acres or stream miles and not in EFUs.

The conservation measures of up to 75.2 acres of critical habitat and 65 EFUs within the Plum Creek arm will occur in the West Plum Creek CHU. Within the West Plum Creek CHU there are four proposed on-site compensatory mitigation areas that overlap with designated critical habitat (these are mitigation areas PC-1, PC-2, PC-4, and PC-9 as described in the CMP). These four areas comprise approximately 5.8 acres.

Off-site conservation measures for impacts to Preble's mouse critical habitat in the Upper South Platte CHU are proposed to involve implementation of the Sugar Creek Sediment Mitigation Project (see Section 6.3.2 of the Compensatory Mitigation Plan [Appendix K of this FR/EIS]) and other habitat enhancement measures in the Pike National Forest. Sugar Creek is a tributary of the South Platte River within the Pike National Forest about 18 miles west of Castle Rock, Colorado. The proposed compensatory mitigation for impacts to designated critical habitat for Preble's mouse associated with the Chatfield Reservoir Storage Reallocation Project includes actions to substantially reduce and minimize the pervasive sediment impacts to the riparian and aquatic habitats within about a 4.5-mile reach of Sugar Creek that is designated critical habitat for Preble's mouse (68 Fed. Reg. 37301, June 23, 2003). The main source of the sediment in Sugar Creek and its riparian areas and wetlands is from Highway 67 and the highly erodible decomposed granite that composes the cut slopes along the road. Past fires higher in the watershed contribute some sediment, but it is a minor contribution relative to the adjoining road, slope and soils. The mitigation project would benefit this reach of Preble's mouse critical habitat by returning Sugar Creek to a functioning aquatic and riparian ecosystem. In addition to Preble's mouse, this reach of Sugar Creek is known to provide habitat for the federally listed Pawnee montane skipper.. The potential effects of the Sugar Creek Sediment Mitigation Project on the skipper and Preble's mouse are addressed in Sections 5.2.6 and 5.2.10, respectively, of this BA. Suitable habitat is not present in the Sugar Creek Sediment Mitigation Project area for any other federally listed species, including the Mexican spotted owl, and thus these species would not be affected by the Sugar Creek project, as indicated in the Forest Service's BA for the pilot project (USFS 2012).

Although there are more than 3,000 acres of critical habitat within the PNF, feasible opportunities for mitigation on PNF lands is very limited due to high quality existing habitat, steep topography, and poor access (for additional details see the review of PNF critical habitat in Appendix H of the CMP). Additionally, for the PNF drainages most of the areas of actual Preble's mouse habitat (riparian areas and areas of adjoining upland shrubs) comprise a minor portion of the designated critical habitat, because most of the designated critical habitat is Ponderosa pine-Douglas-fir forest. Much of the forest within the designated critical habitat occurs on dry slopes of decomposed granite. Therefore, there are limited opportunities for forest management activities to improve Preble's mouse habitat.

It appears that Sugar Creek provides the most feasible opportunities for mitigation for impacts to designated critical habitat for Preble's mouse. The proposed mitigation within the critical habitat reach of Sugar Creek would be in addition to any management activities by the U.S. Forest Service.

The U.S. Forest Service does not have the funding at this time, or the foreseeable future, to implement the Sugar Creek Sediment Mitigation Project. The Pike National Forest is currently addressing a variety of issues associated with catastrophic wildfires from the past decade. While the Sugar Creek Sediment Mitigation Project would benefit national forest lands, water resources and habitat along Sugar Creek, addressing the larger scale issues associated with the catastrophic wildfires is a higher priority for the Pike National Forest and it is directing its limited resources toward these issues.

**Responsibility.** The Chatfield Water Providers would be contractually responsible for the full implementation of the mitigation obligations defined by the ROD, including monitoring, funding, reporting, adaptive management, and corrective actions for the CMP and all other mitigation obligations in the ROD. The obligation to implement the requirements described in the ROD would be specified in the Chatfield Project Storage Agreement between the Corps and DNR, which is then assigned by DNR to each of the Chatfield Water Providers in the Reallocated Storage User Agreements. The Chatfield Water Providers plan to form a nonprofit corporation, known as the Chatfield Reservoir Mitigation Company that would be responsible for the day-to-day tasks of implementing the obligations in the ROD, including the CMP and other mitigation obligations.

**Monitoring and Adaptive Management.** Monitoring would occur at least annually until the entire CMP is fully implemented. Each individual mitigation activity would be monitored at least annually for a minimum of 5 years or until meeting the success criteria (as defined in the CMP). If success criteria are met prior to year 5 of monitoring, the Chatfield Water Providers may request from the Corps that monitoring end since the success criteria have been met. Given that the compensatory mitigation implementation process is anticipated to span 6 years, monitoring would take at least 6 years, and the monitoring of some of the individual mitigation activities may extend beyond the 6-year mitigation implementation period.

The goals of monitoring are to: 1) determine if the estimated maximum impacts stated in the CMP (that form the basis for the mitigation objectives) need to be revised, 2) document that compensatory mitigation activities are properly and fully implemented, 3) ensure the compensatory mitigation objectives are met, and 4) provide information needed for adaptive management. The following monitoring actions would be common to all mitigation activities:

- Documentation that the mitigation activity has been fully implemented (e.g., as-built report, recordation of a conservation easement for protected properties, or report on habitat enhancement activities);
- Documentation of progress in meeting the success criteria;
- Recommended corrective actions;
- Management or corrective actions taken since last monitoring; and
- Number of EFUs gained to date.

The Chatfield Water Providers would provide annual monitoring reports to the Project Coordination Team and Technical Advisory Committee. The Technical Advisory Committee

would be comprised of representatives from the following entities: U.S. Army Corps of Engineers, Colorado Water Conservation Board and/or CDNR, U.S. Fish and Wildlife Service, Colorado Parks and Wildlife, Audubon Society of Greater Denver and/or other environmental organizations, Chatfield Water Providers, Douglas County Land Trust or other land conservation organization, Denver Water, and other “in-stream” interests. Monitoring would be concluded when all of the core mitigation objectives are met. The Corps would determine when all mitigation objectives have been successfully met.

Adaptive management would be used to address anticipated and unanticipated issues and events that affect compensatory mitigation activities. Monitoring would determine the degree to which issues and events adversely affect or limit proposed compensatory mitigation activities. All adaptive management measures would be coordinated with the Project Coordination Team and Technical Advisory Committee.

**Schedule.** If the reallocation is approved, the Chatfield Water Providers would begin implementing the CMP as soon as practicable following the approval. By implementing the CMP soon after approval, some amount of compensatory mitigation would be in place (e.g., on-site mitigation) prior to the impacts occurring. Mitigation milestones have been established in the CMP that correspond to the phased use of the reallocated storage in Chatfield Reservoir. By year 3 following project approval there would be 100 percent implementation of mitigation for impacts to Preble’s critical habitat.

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## **9.0 List of Preparers and Consultation**

### **Preparers:**

Gary Drendel, Certified Senior Ecologist, Tetra Tech, Inc., Lakewood, CO

Thomas Ryon, Otter Tail Environmental, Inc., Golden, CO

### **Consultation with Cooperating Agencies:**

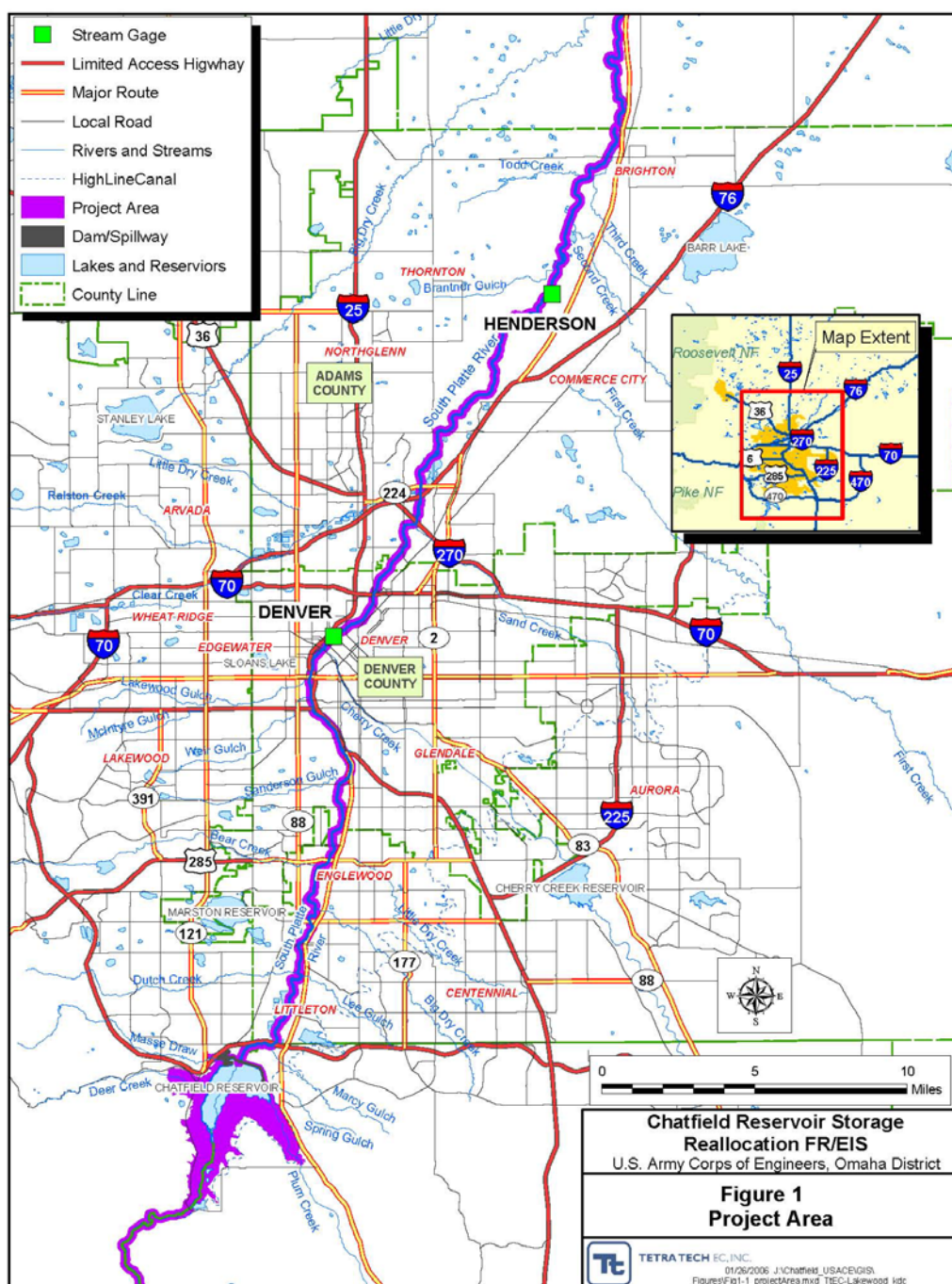
- November 10, 2003: USFWS, USACE, and Tetra Tech meeting
- March 17, 2004: USFWS, Colorado State Parks, CWCB, Colorado Division of Wildlife (CDOW), USACE, and Tetra Tech meeting
- February 10, 2005: USFWS, USACE, Tetra Tech, and Ottertail Environmental meeting
- May 10, 2006: USFWS, USACE, and Tetra Tech meeting to discuss delineation of Preble's Meadow Jumping Mouse Habitat at the Chatfield Lake Project Area, and additional biological issues.
- May 14, 2007: USFWS, Tetra Tech, and OtterTail Environmental meeting to discuss requirements for South Platte Water Related Activities Program (SPWRAP).
- July 30, 2007: USFWS, Tetra Tech, and OtterTail Environmental meeting to discuss Mitigation for Preble's Meadow Jumping Mouse.
- September 12, 2007: USFWS, USACE, and Tetra Tech conference call to discuss Section 7, BA, and BO preparation and coordination
- November 2, 2007: USFWS, USFS, and Ottertail Environmental meeting and field trip to Preble's mouse critical habitat and potential mitigation sites on Upper South Platte.
- November 20, 2007: Chatfield Reservoir Reallocation FR/EIS Approaches to Mitigation and Conservation Measures at USFWS Colorado Field Office
- February 5, 2009: Chatfield Update Meeting
- March 6, 2009: USFWS, USACE, Tetra Tech, and Ottertail Environmental conference call to discuss ESA coordination
- September 30, 2009: USFWS, USFS, USACE, ERO, and Tetra Tech meeting to discuss Preble's Mouse mitigation sites on USFS property on Upper South Platte
- April 10, 2012: USFWS, USACE, ERO, and Tetra Tech meeting to discuss project status and plan for mitigation
- Additional cooperating agency and stakeholder coordination meetings are listed in Appendix A of the Compensatory Mitigation Plan.

**Experts Consulted:**

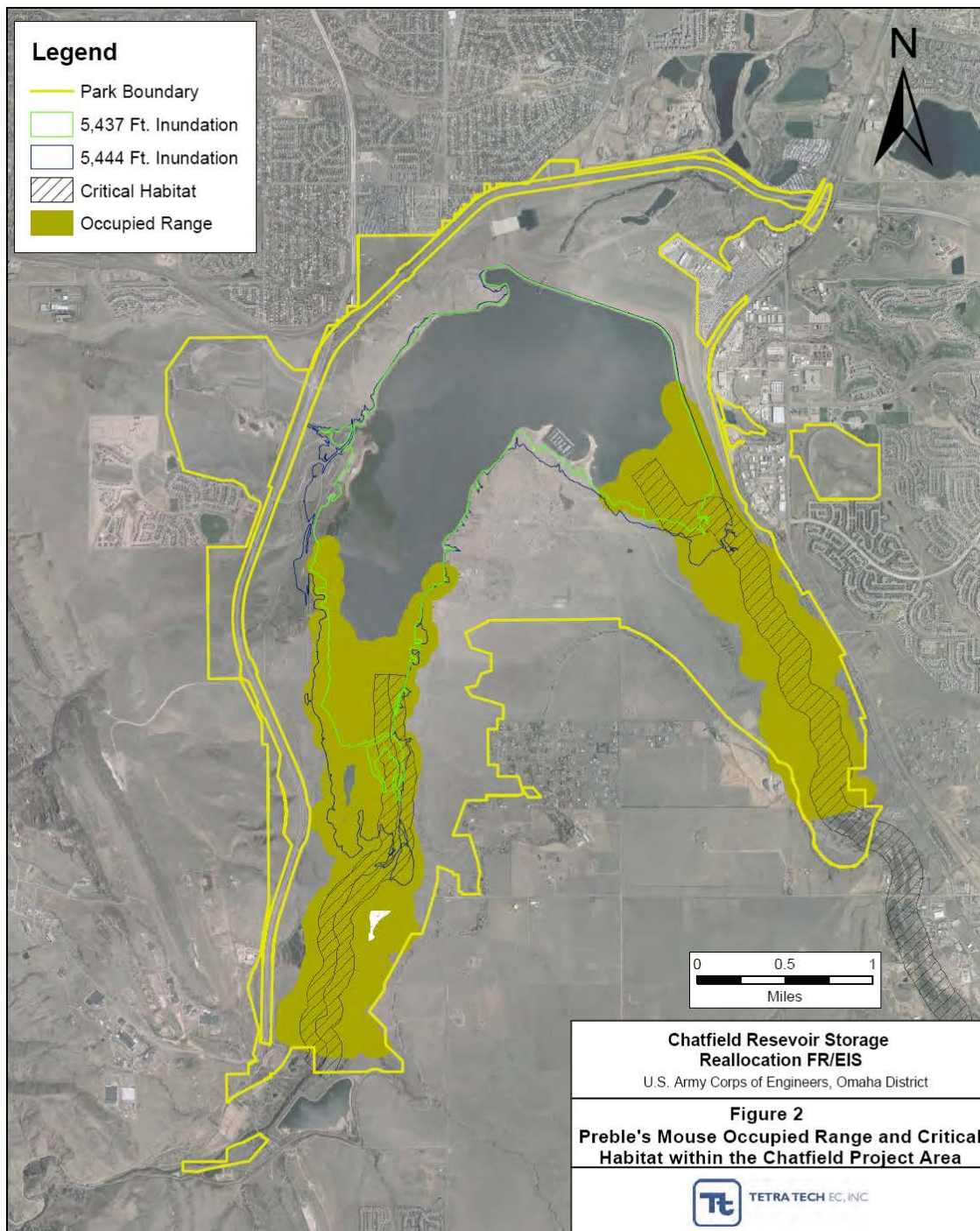
- Ellen Mayo, United States Fish and Wildlife Service, Grand Junction Office
- Erin Robertson, Senior Staff Biologist, Center for Native Ecosystems
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## FIGURES

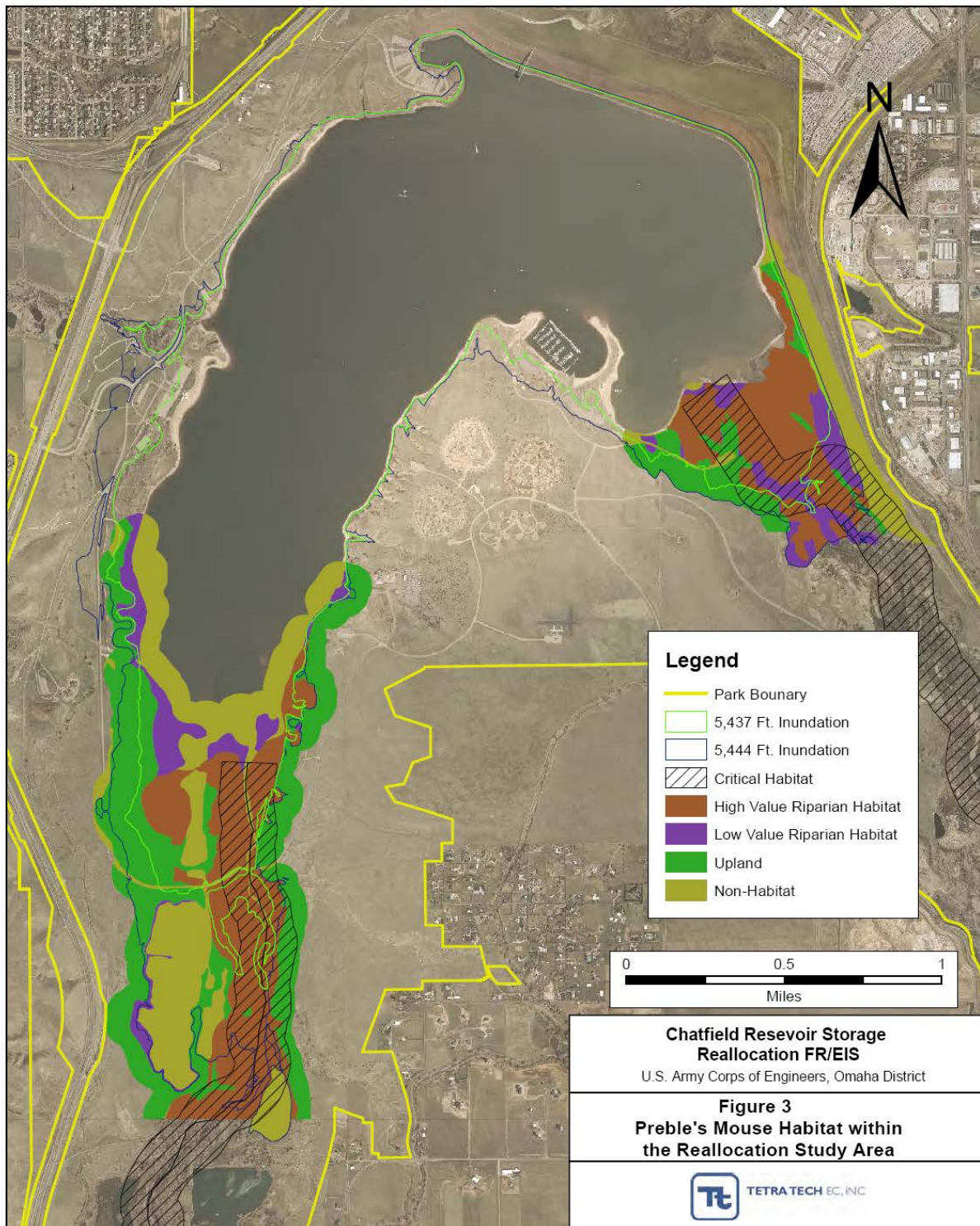
Figure 1. Project Area



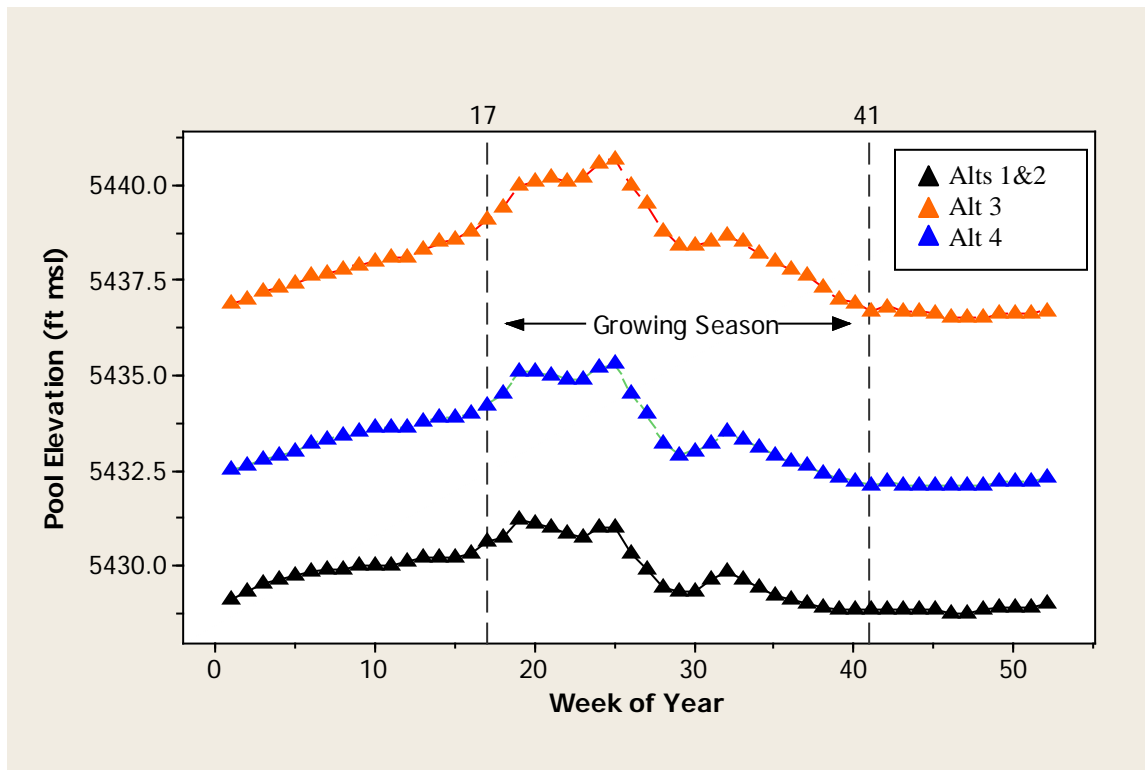
**Figure 2. Preble's Mouse Occupied Range and Critical Habitat within the Chatfield Project**



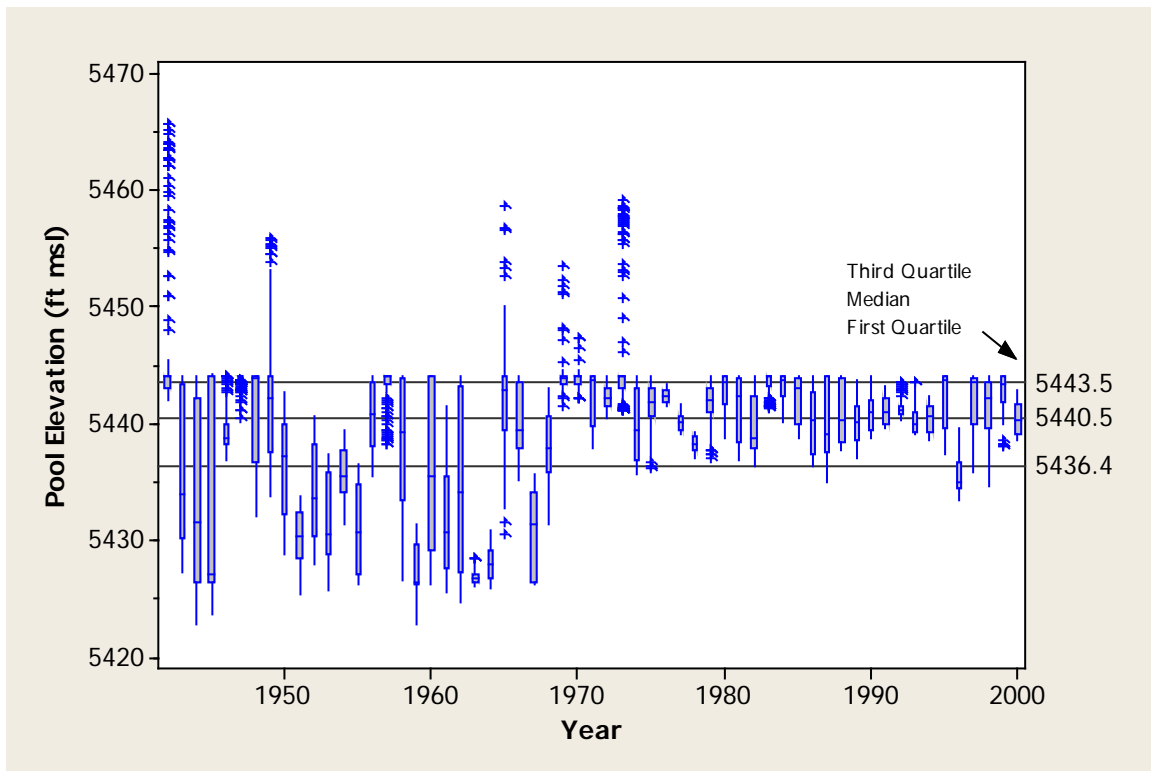
**Figure 3. Preble's Mouse Habitat within the Reallocation Study Area**



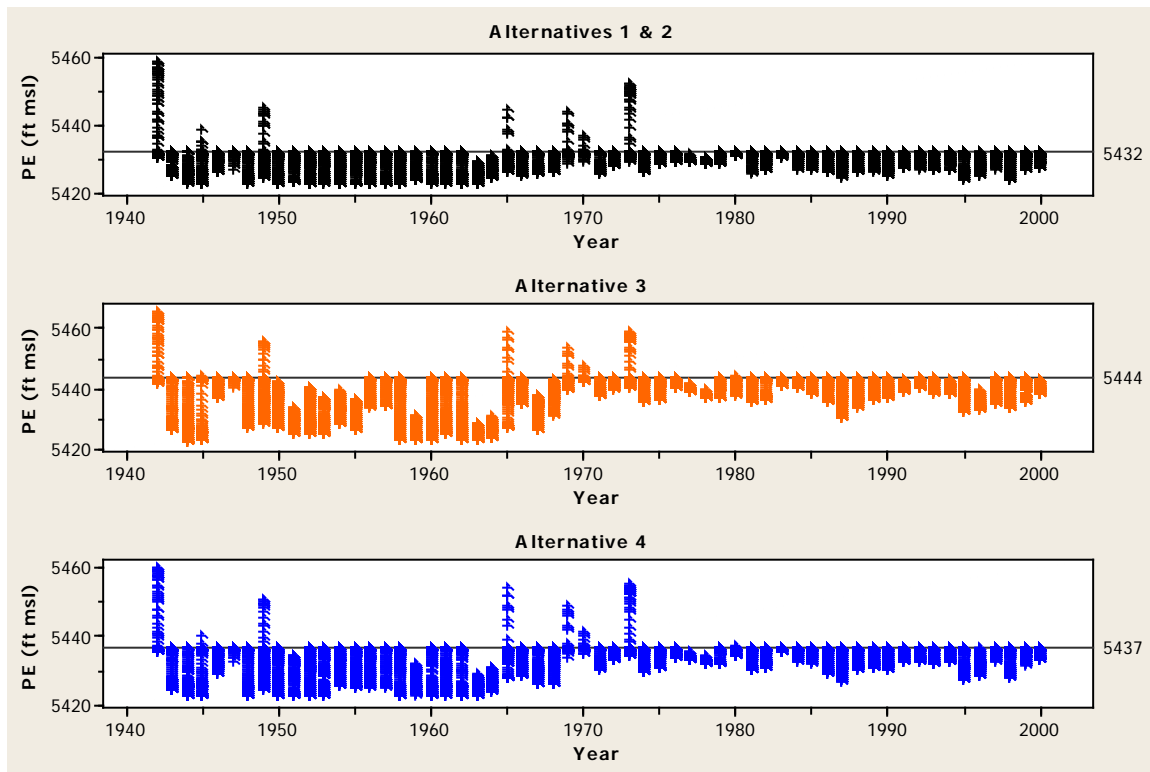
**Figure 4. Weekly Mean Pool Elevations for the Entire Year for All Alternatives**



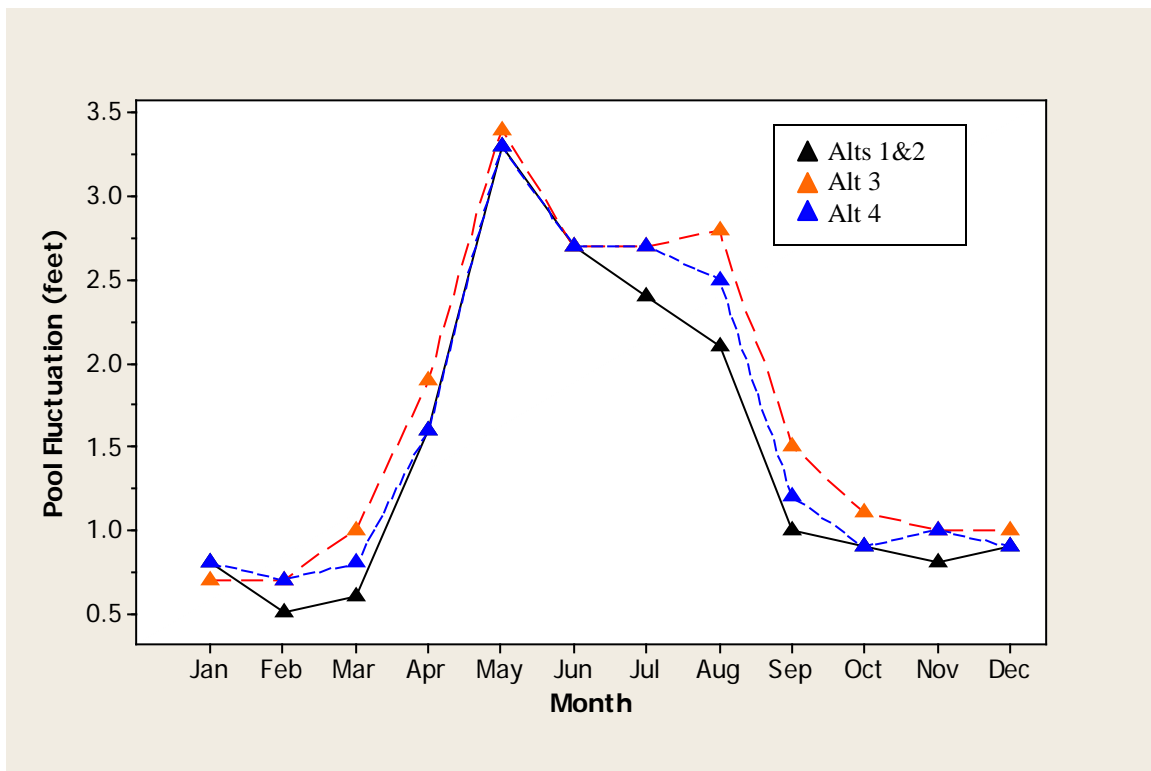
**Figure 5. Pool Fluctuation During Growing Season Under Alternative 3**



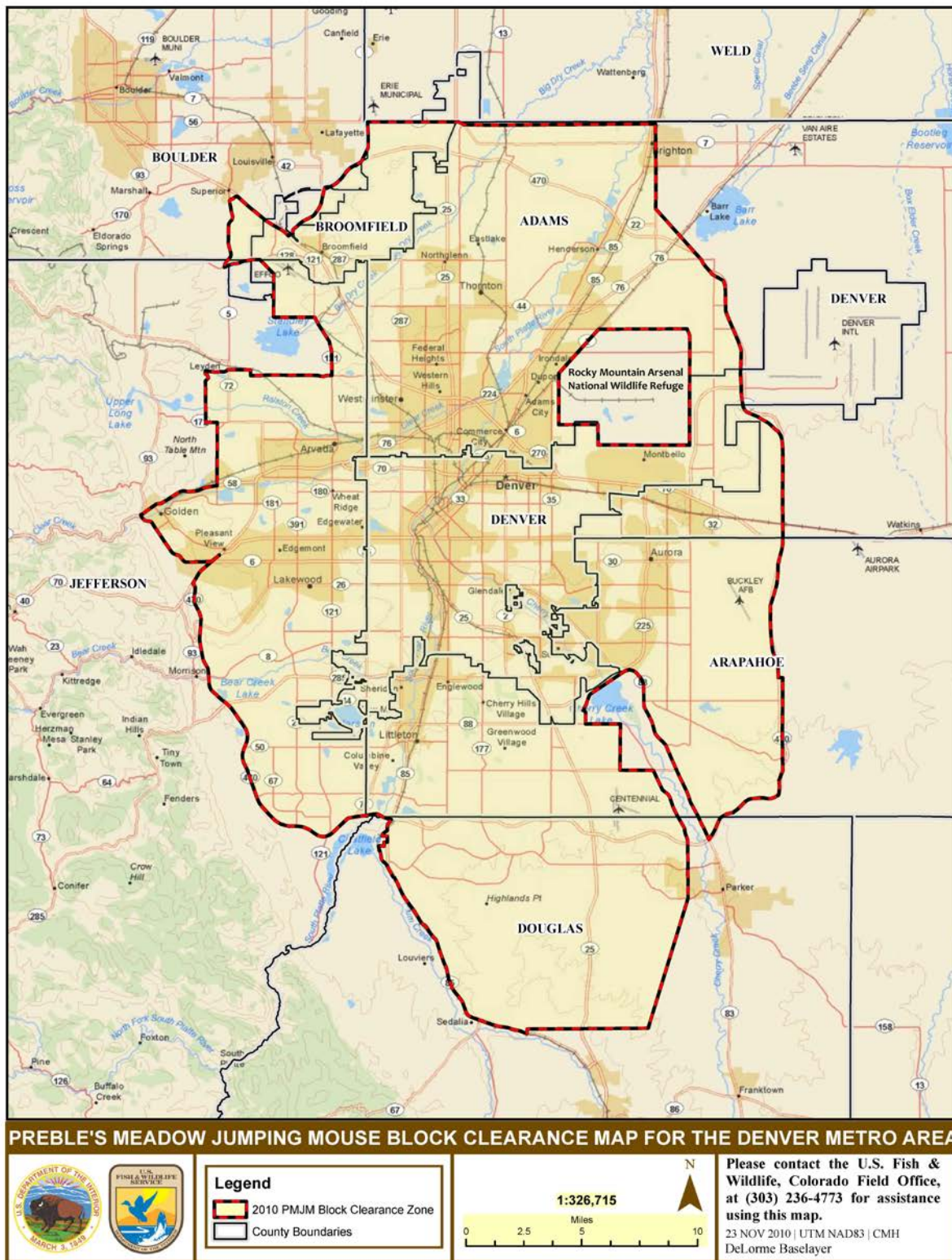
**Figure 6. Pool Elevations Over the POR by Alternative**



**Figure 7. Average Monthly Pool Fluctuations in Chatfield Reservoir**



**Figure 8. Preble's Meadow Jumping Mouse Block Clearance Map for the Metro Denver Area.**



## **Attachment 1: PRRIP BA**

# **Platte River Recovery Implementation Program Biological Assessment & Request for Formal Section 7 Consultation**

June 1 2012

From: US Army Corps of Engineers  
Omaha District  
Attn: CENWO-PM-AP  
106 South 15th Street  
Omaha, NE 68102-1618

To: U.S. Fish & Wildlife Service  
Ecological Services  
Colorado Field Office  
P.O. Box 25486, DFC (MS 65412)  
Denver, Colorado 80225-0486  
Attn: Sandy Vana-Miller

This letter contains the Biological Assessment addressing potential impacts from operation of the Chatfield Reservoir Storage Reallocation Project (Project) on federally-listed species in Nebraska. With this submission, we are requesting initiation of Formal Consultation under Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et. Seq.)(ESA), concerning the whooping crane (*Grus americana*), interior least tern (*Sternula antillarum*), northern Great Plains population of the piping plover (*Charadrius melodus*), and pallid sturgeon (*Scaphirhynchus albus*) (collectively referred to as the “target species”), and designated critical habitat of the whooping crane. We further request initiation of Formal Consultation for the western prairie fringed orchid (*Platanthera praeclara*). We have determined that the Project is not likely to adversely affect the American burying beetle (*Nicrophorus americanus*) and will have no effect on the Eskimo curlew (*Numenius borealis*).

## **Project Background**

**Project:** The Chatfield Reservoir, which stores and distributes water to the Front Range of Colorado, is under consideration for reallocating water storage space and distribution. A combined Feasibility Report (FR) and Environmental Impact Statement (EIS) were prepared to evaluate the potential for reallocation of reservoir storage space from flood control use to conservation purposes, including storage for up to 20,600 acre-feet (AF) for municipal and industrial (M&I) water supply and agriculture.

**Applicant and Federal Action associated with the Project:** The Colorado Water Conservation Board (CWCB) entered into a Feasibility Cost Share Agreement (FCSA) with the U.S. Army Corps of Engineers (Corps) to complete a FR/EIS for the reallocation effort. The CWCB also signed individual agreements (Letters of Commitment) with 16 Front Range water providers to formalize requirements related to study costs and allocation of potential space in the reservoir. Fifteen water providers remain in the study, however, as noted in footnote 1 of Table 1, City of Brighton, Mount

Carbon Metropolitan District, and Perry Park Country Club have given written notice to CWCBC of their intent to withdraw from the study.

**Project location:** Chatfield Reservoir is located at the confluence of the South Platte River and Plum Creek within the South Platte Basin. The reservoir is located southwest of Denver in Douglas, Jefferson, and Arapahoe counties. The drainage area for the South Platte River Basin upstream of the reservoir encompasses 3,018 square miles and originates at the headwaters of the North Fork of the South Platte and the South Fork of the South Platte in Park County, Colorado. The United States Forest Service (USFS) manages most of the lands along the mainstem of the South Platte River upstream of the reservoir. Plum Creek, the second largest of the reservoir's tributaries, flows through a mixture of rangelands and suburban areas. The Chatfield Reservoir and surrounding state park is located near Littleton, Colorado, and south of State Highway 470 (i.e., C-470).

An antecedent flood study was completed and approved by the Corps to allow for the conversion of flood control storage space to water supply storage space. The study demonstrated that the reallocation could take place using technical, administrative, and operational techniques without requiring physical changes to the dam or spillway, and without adversely impacting the flood control function of Chatfield Reservoir.

The Chatfield Reservoir currently manages a multipurpose-conservation pool at an elevation of 5,432 ft mean sea level (msl). The FR/EIS determined that 20,600 AF would be the greatest volume of storage that could be reallocated from flood control to multipurpose use without major incremental costs or jeopardizing the flood control function of Chatfield Reservoir. The 20,600 AF Reallocation would reallocate storage from the flood control pool to the multipurpose-conservation pool. The additional storage would be used for M&I, conjunctive, and augmentation uses. Under this alternative, the elevation of the multipurpose-conservation pool would be raised from 5,432 to 5,444 ft msl. The average annual yield is estimated at 8,539 AF.

The Reallocation would require a change in the operations of the reservoir and would require the construction of additional infrastructure and relocation of some of the existing roads and facilities. Currently, Denver Water is the only entity that has storage rights in Chatfield Reservoir. Under the reallocation, an additional 15 entities would have storage rights within the reservoir (see Table 1). The reservoir will continue to be managed based on the elevation of the water level at a given time. The State Engineer would continue to manage the discharge within the multipurpose-conservation pool based on Colorado water law and the demand for water supply while the Corps manages the flood control pool discharges in order to release the maximum amount of water possible while keeping below a target flow of 5,000 cubic feet per second (cfs) in the South Platte River at the Denver Gage. Once the pool elevation falls back to the multipurpose-conservation pool, the State Engineers Office resumes responsibility for managing the discharge.

Operation of this Project will result in some amount of continuing historic and/or new depletions to the South Platte River associated with the average annual use of 8,539 AF of water for M&I, agricultural, and recreation use. Table 2 summarizes water provider and water use information for the project, including the source and quantity of water, use of the water, and location of use. Municipal and industrial use will be the main use of the water, this will include 10 of the 15 water providers. Three water providers will use it for agriculture, and two water providers will

use it for recreation. Most of the water will be used in Douglas, Adams, Arapahoe, Denver, Weld, and Morgan Counties. Small amounts will be used in Jefferson (40 AF storage) and Park (131 AF storage) Counties. The service areas for the water providers are shown in Figure 1.

The Platte River Recovery Implementation Program (PRRIP), established in 2006, is implementing actions designed to assist in the conservation and recovery of the target species and their associated habitats along the central and lower Platte River in Nebraska through a basin-wide cooperative approach agreed to by the States of Colorado, Nebraska, and Wyoming and the U.S. Department of the Interior [Program, I.A.1.]. The Program addresses the adverse impacts of existing and certain new water related activities on the Platte target species and associated habitats, as well as provides ESA compliance<sup>1</sup> for effects to the target species and whooping crane critical habitat from such activities including avoidance of any prohibited take of such species. [Program, I.A.2. & footnote 2]. The State of Colorado is in compliance with its obligations under the Program.

For Federal actions and projects participating in the Program, the Platte River Recovery Implementation Program Final Environmental Impact Statement (FEIS) and the June 16, 2006 Programmatic Biological Opinion (PBO) serve as the description of the environmental baseline and environmental consequences for the effects of the Federal actions on the listed target species, whooping crane critical habitat, and other listed species in the central and lower Platte River. These documents are hereby incorporated into this Biological Assessment by this reference.

Table II-1 of the PBO (pp. 21-23) contains a list of species and critical habitat in the action area, their status, and the Service's determination of the effects of the Federal action analyzed in the PBO. The Service determined in the PBO that the continued operation of existing and certain new water-related activities may adversely affect but would not likely jeopardize the continued existence of the endangered whooping crane, interior least tern, pallid sturgeon, or the threatened northern Great Plains population of the piping plover. Further, the Service found that the continued operation of existing and certain new water-related activities may adversely affect but would not likely jeopardize the threatened bald eagle and western prairie fringed orchid associated with the central and lower reaches of the Platte River in Nebraska, and was not likely to destroy or adversely modify designated critical habitat for the whooping crane. The bald eagle was subsequently removed from the federal endangered species list on August 8, 2007.

The Service also determined that the PBO Federal Action would have no effect on the endangered Eskimo curlew. There has not been a confirmed sighting since 1926 and this species is believed to be extirpated in Nebraska. Lastly, the Service determined that the PBO Federal Action, including the continued operation of existing and certain new water-related activities, was not likely to adversely affect the endangered American burying beetle.

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<sup>1</sup> "ESA compliance" means: (1) serving as the reasonable and prudent alternative to offset the effects of water-related activities that the U.S. Fish & Wildlife Service found were likely to cause jeopardy to one or more of the target species or to adversely modify critical habitat before the Program was in place; (2) providing offsetting measures to avoid the likelihood of jeopardy to one or more of the target species or adverse modification of critical habitat in the Platte River basin for new or existing water-related activities evaluated under the ESA after the Program was in place; and (3) avoiding any prohibited take of target species in the Platte River basin.

The above-described Project operations qualify as a new water related activity because such operations constitute a new surface water or hydrologically connected groundwater activity which may affect the quantity or timing of water reaching the associated habitats of the target species implemented after July 1, 1997 [Program, I.A. footnote 3]. The Project conforms to the following criteria in Section H of Colorado's Plan for Future Depletions [Program, Attachment 5, Section 9]:

1. The Project is operated on behalf of Colorado water providers.
2. The Project does not involve construction of a major on-stream reservoir located on the mainstem of the South Platte River anywhere downstream of Denver, Colorado.
3. The Project is not a hydropower diversion/return project diverting water including sediments from the mainstem of the South Platte River anywhere downstream of Denver and returning clear water to the South Platte River.
4. The Project does not cause the average annual water supply to serve Colorado's population increase from Wastewater Exchange/Reuse and Native South Platte Flows to exceed 98,110 acre feet during the February-July period.

Accordingly, the impacts of this activity to the target species, whooping crane critical habitat, and other listed species in the central and lower Platte River addressed in the PBO are covered and offset by operation of Colorado's Future Depletions Plan as part of the PRRIP.

The Applicant intends to rely on the provisions of the Program to provide ESA compliance for potential impacts to the target species and whooping crane critical habitat. The U.S. Army Corps of Engineers intends to require, as a condition of any approval, that the Applicant fulfill the responsibilities required of Program participants in Colorado, which includes participation in the South Platte Water Related Activities Program, Inc. (SPWRAP). All of the water providers who are planning to remain involved in the study were SPWRAP members in 2011, and have either renewed their membership or are in the processing of renewing their membership for 2012. Copies of the 2011 Certificates of Membership in SPWRAP are included in Attachment A. The U.S. Army Corps of Engineers also intends to retain discretionary Federal authority for the Project, consistent with applicable regulations and Program provisions, in case reinitiation of Section 7 consultation is required.

This letter addresses consultation on all listed species and designated critical habitat, including the referenced Platte River target species and whooping crane critical habitat. Potential impacts from construction and operation of the Project to any other federally-listed threatened or endangered species and designated critical habitats will be addressed within the applicable biological opinion prepared by the Service, in accordance with the ESA.

[Signature]

**(From The U.S. Army Corps of Engineers)**

**Table 1. Colorado Water Providers Requesting Storage Space in Chatfield Reservoir**

Entity Requesting Storage	Nature of Entity	Purpose of Use of Storage	Maximum Storage Reallocation (acre-feet)	Percent of Costs and Storage Reallocation
<b>Downstream Providers</b>				
City of Aurora	Municipality	Municipal and Industrial <sup>2</sup>	3,561	17.3
City of Brighton <sup>1</sup>	Municipality	Municipal and Industrial	1,425	6.9
Central Colorado Water Conservancy District (WCD)	Agricultural	Agricultural	2,849	13.8
Colorado State Parks	Governmental: State Agency	Recreation	1,000	4.9
Denver Botanic Gardens at Chatfield	Governmental: City and County of Denver	Recreation and Agriculture	40	0.2
Western Mutual Ditch Company	Agricultural	Agricultural	1,425	6.9
<b>Upstream Providers</b>				
Castle Pines Metropolitan District <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	660.58	3.2
Castle Pines North Metropolitan District <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	822.58	4.0
Centennial Water and Sanitation District (WSD) <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	5,253.95	25.5
Center of Colorado Water Conservancy District (WCD)	Governmental: Park County	Municipal and Industrial	131.32	0.6
Mount Carbon Metropolitan District <sup>1</sup>	Local government serving Denver suburban area	Municipal and Industrial	400	1.9
Perry Park Country Club <sup>1</sup>	Private	Municipal	100	0.5
Roxborough Water and Sanitation District (WSD) <sup>3</sup>	Local government serving Denver suburban area	Municipal and Industrial	500	2.4
Other South Metro Water Supply Authority (SMWSA) <sup>3</sup>	Local governments providing water supplies to Denver suburbs	Municipal and Industrial	1,418.42	6.9
Town of Castle Rock <sup>3</sup>	Municipality	Municipal and Industrial	1,013.16	4.9
<b>Total</b>			<b>20,600</b>	<b>100%</b>

<sup>1</sup>The City of Brighton, Mount Carbon Metropolitan District, and Perry Park Country Club have given written notice to CWCB (March 22, 2010, August 27, 2010, and April 8, 2011, respectively) of their intent to surrender their allocations and withdraw from the Chatfield study. Information pertaining to the reassignment of their allocations will be provided when available. The occurrences of the City of Brighton, Mount Carbon Metropolitan District, and Perry Park Country Club are highlighted in yellow as a place-holder for these changes.

<sup>2</sup>Municipal and Industrial uses may include domestic, mechanical, manufacturing, and industrial uses; power generation; fire protection; sewage treatment; street sprinkling; irrigation of parks, lawns, gardens, and grounds; and augmentation and replacement, recharge, use as a substitute water supply, and exchange for water supplies also dedicated to these types of uses.

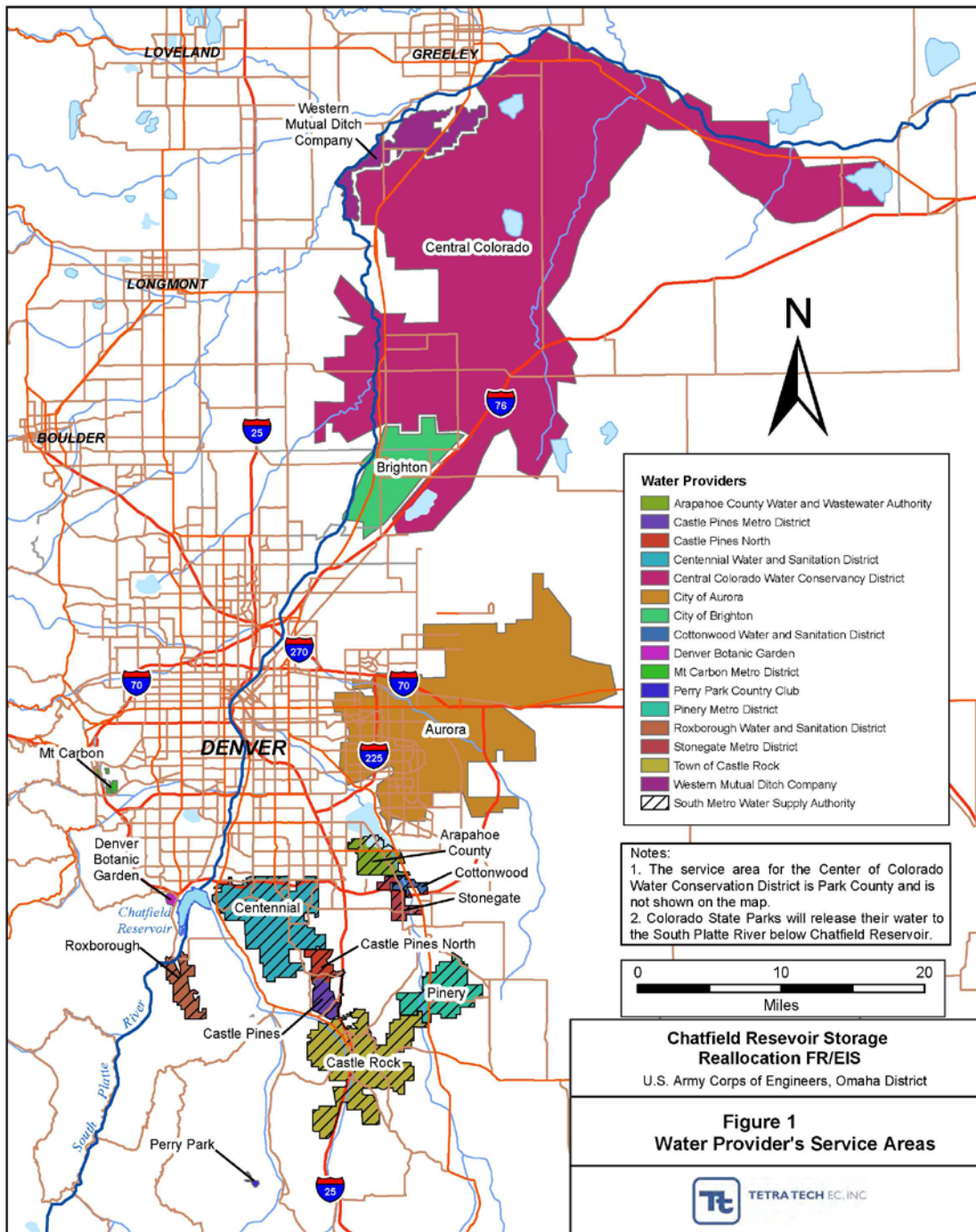
<sup>3</sup>The SMWSA includes the following nine local-government water providers: Arapahoe County Water and Wastewater Authority, Castle Pines Metropolitan District, Castle Pines North Metropolitan District, Town of Castle Rock, Centennial WSD, Cottonwood WSD, Roxborough WSD, Stonegate Village Metropolitan District, and Denver Southeast Suburban Water and Sanitation District, doing business as Pinery Water and Wastewater District.

**Table 2. Chatfield Reservoir Storage Reallocation Project: Water Provider Information**

Water Provider	Reallocated Space, AF	Average year	Type of Water Right Planned to be used in Chatfield Reservoir	Nature of Water Use	Quantification of Use (Taps or Acres)	Location of Use County
		Yield, AF (1)				
		(@0.34)				
Downstream Provider						
Aurora	3,561	1,211	Junior SW	M & I	2,421 taps	Arapahoe, Adams
Brighton	1,425	485	Junior SW	M & I	969 taps	Adams
Central Colorado Water Conservancy District	2,849	969	Junior SW	Ag	100,000 acres	Adams, Weld, Morgan
Western Mutual Ditch Company	1,425	485	Junior SW	Ag	7,900 acres	Weld
Colorado State Parks	1,000	340	Junior SW	Rec	n/a	Denver, Adams
Denver Botanic Gardens	40	14	Junior SW	Ag	59 acres	Jefferson
Upstream Provider						
Mt. Carbon Metro Dist.	400.0	136.00	Junior SW	M & I	272 taps	Douglas
Centennial WSD (2)	5,741.1	1,951.97	Junior SW	M & I	3,904 taps	Douglas
Castle Rock (2)	1,500.3	510.10	Jr SW & NTGW	M & I	1,020 taps	Douglas
Roxborough WSD (2)	564.3	191.86	Junior SW	M & I	384 taps	Douglas
Castle Pines North (2)	886.8	301.51	Jr SW & NTGW	M & I	603 taps	Douglas
Castle Pines Metro District (2)	661.7	224.98	Jr SW & NTGW	M & I	450 taps	Douglas
Perry Park Country Club	100.0	34.00	Junior SW	Rec	86 acres	Douglas
Center of Colorado Water Conservation District	131.3	44.64	Junior SW	M & I	90 taps	Park
Remaining South Metro Water Supply Authority (3)	314.5	106.93	Junior SW	M & I	214 taps	Douglas
Total =	20,600	7,004				

SW = surface water  
 NTGW = nontributary groundwater  
 M&I= municipal and industrial  
 Ag = agricultural  
 Rec = recreation

SMWSA = South Metro Water Supply Authority  
 WSD = Water and Sanitation District  
 (1) Assumes Average Year Yield equals 34% of storage space  
 (2) Part of South Metro Water Supply Authority  
 (3) The remaining members of SMWSA who are participating in the Project are: Stonegate Metropolitan District, Cottonwood WSD, Pinery WSD, and Arapahoe County Water and Wastewater Authority.



## **Attachment A**

### **Certificates of Membership in SPWRAP**

**YEAR: 2011**

**37,246.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS M**

This certifies that **Arapahoe County Water & Wastewater Authority** ("Member") has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 31<sup>st</sup> day of May, 2011.

Eric Dewey  
Secretary

[seal]

Lisa B. Darling  
President

**YEAR: 2011**

**598,903.20 UNITS**

**CERTIFICATE OF MEMBERSHIP**

***South Platte Water Related Activities Program, Inc.***

**CLASS M**

**City of Aurora**

This certifies that \_\_\_\_\_ ("Member")  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 24 day of March, 2011.

Bruce Dewey  
Asst. Secretary

[seal]

Lois L. Gault  
President

Membership in SPWRAP entitles the Member to those rights and privileges specified in the Articles of Incorporation and Bylaws of SPWRAP, as may be amended from time to time, provided said Member is current in payment of annual fees and assessments levied by SPWRAP.

This Member may rely on implementation of the Platte River Recovery Implementation Program ("PRRIP") for Endangered Species Act ("ESA") compliance for its water-related activities affecting flow volume and timing in the central and lower reaches of the Platte River in Nebraska to the extent described in the PRRIP and June 16, 2006 Programmatic Biological Opinion. The following conditions apply to Member's reliance on the PRRIP for ESA compliance purposes: (1) PRRIP coverage for ESA compliance is dependent upon continued implementation of the PRRIP and fulfillment of Colorado's responsibilities under the PRRIP; (2) PRRIP coverage extends to Member's interests in facilities, water rights, and other water-related activities associated with the: i] irrigated acreage for Class A and W members; ii] municipal and domestic water supply system for Class M members; iii] diversions for self-supplied industrial water needs for Class I members; and, iv] depletions for Class X-2 members, upon which Member's Units are based; (3) Member must be current in payment of applicable fees and assessments levied by SPWRAP with respect to Member's Units; (4) PRRIP coverage does not obviate the need to follow procedural requirements of the ESA, including those related to Section 7 consultation, that may be or become applicable to Member or its activities; and (5) PRRIP coverage does not extend to site-specific project impacts that may affect federally listed species or designated critical habitat outside the scope of the PRRIP and Programmatic Biological Opinion.

Any member who is not a natural person must provide to SPWRAP the name of the person authorized to cast votes for that member. Any changes of such authorization must be made in writing and received by SPWRAP not less than 30 days prior to an annual meeting at which such votes are to be cast.

#### RATIONALE - Membership Units/Assessments

1. The traditional "trigger" for Platte Section 7 compliance, and thus the key driver for membership in SPWRAP, is construction, maintenance and/or operation of structures and facilities diverting out of the South Platte River and its tributaries. A membership covers all facilities of the member entity including diversion, conveyance, storage and other associated structures. Each entity utilizing those should have its own membership and certificate in SPWRAP.
2. Payment (Units) will be based on the following as more fully described in Article VI.B. of the Articles of Incorporation:
  - Class A: The acreage that is thereby irrigated through that member entity.
  - Class I: The member's diversions, in acre feet.
  - Class M: The member's single family equivalent taps, calculated as one SFE per half acre foot of potable water treated by or delivered to the water supply entity.
  - Class W: The irrigated acreage within the member's boundaries.
  - Class X-2: The "small depletion" determination made by the USFWS.
  - Class X-3: An entity that operates a plan for augmentation to replace the depletions caused primarily by rural domestic wells.
3. Where multiple structures / water rights of different member entities serve the same acreage, flexibility exists to allocate that acreage among the participating entities for purposes of determining assessments.

**YEAR: 2011**

**12,852.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS M**

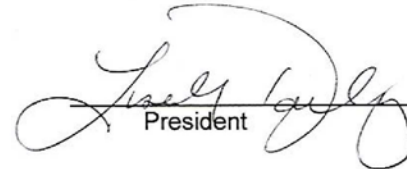
**Castle Pines Metropolitan District**

This certifies that \_\_\_\_\_ ("Member")  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 7 day of March, 2011.

  
\_\_\_\_\_  
Secretary

[seal]

  
\_\_\_\_\_  
President

**YEAR: 2011**

**22,857.6 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS M**

**Castle Pines North Metro District**

This certifies that \_\_\_\_\_ („Member”)  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 24 day of March, 2011.

  
Asst. Secretary

[seal]

  
President

**YEAR: 2011**

**76,939.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS M**

**Town of Castle Rock**

This certifies that \_\_\_\_\_ („Member”)  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 15<sup>th</sup> day of April, 2011.

*Eric Dewey*  
Secretary

[seal]

*Lisa B. Darling*  
President

**YEAR: 2011**

**63,648.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

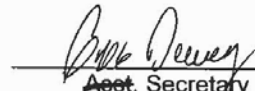
*South Platte Water Related Activities Program, Inc.*

**CLASS M**

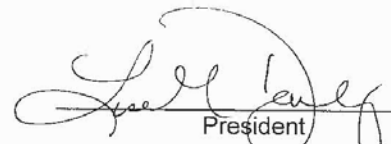
**Centennial Water & Sanitation District**

This certifies that \_\_\_\_\_, ("Member")  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 24 day of March, 2011.

  
Asst. Secretary

[seal]

  
President

**YEAR: 2011 - 2019**

**1,027.5 UNITS/YEAR**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS X-3**

This certifies that **Center of Colorado Water Conservancy District** ("Member") has become a Class X-3 member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 9 day of November 2010.

*[Signature]*  
ASST. Secretary



*[Signature]*  
President

MAR-22-2011 09:55A FROM: D J DRUCKER & ASSOC. 303-838-0302

TO: 3037910437

P.2

**YEAR: 2011**

**3,433.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

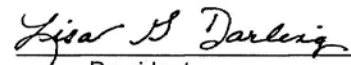
**CLASS W**

This certifies that **Central Colorado Water Conservancy District** ("Member") has become a Class W member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 3<sup>rd</sup> day of April, 2011.

  
Secretary

[seal]

  
President

**YEAR: 2011**

**9,960.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS M**

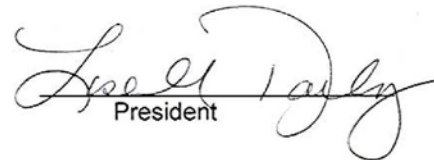
**Cottonwood Water & Sanitation District**

This certifies that \_\_\_\_\_ ("Member")  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 7 day of March, 2011.

  
Secretary

[seal]

  
President

YEAR: 2007 – 2019  
"FIRST INCREMENT"

1.0 UNIT

CERTIFICATE OF MEMBERSHIP

*South Platte Water Related Activities Program, Inc.*

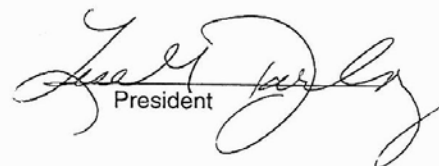
CLASS A

This certifies that Denver Botanical Gardens at Chatfield "Member")  
has become a Class A member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the "First Increment" of the Program as identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 28 day of July, 2010.

  
Secretary

[seal]

  
President

**YEAR: 2011**

**34,548.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS M**

**Denver Southeast Suburban Water & Sanitation District**

This certifies that \_\_\_\_\_ ("Member")  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 27<sup>th</sup> day of April, 2011.

  
Secretary

[seal]

  
President

Membership in SPWRAP entitles the Member to those rights and privileges specified in the Articles of Incorporation and Bylaws of SPWRAP, as may be amended from time to time, provided said Member is current in payment of annual fees and assessments levied by SPWRAP.

This Member may rely on implementation of the Platte River Recovery Implementation Program ("PRRIP") for Endangered Species Act ("ESA") compliance for its water-related activities affecting flow volume and timing in the central and lower reaches of the Platte River in Nebraska to the extent described in the PRRIP and June 16, 2006 Programmatic Biological Opinion. The following conditions apply to Member's reliance on the PRRIP for ESA compliance purposes: (1) PRRIP coverage for ESA compliance is dependent upon continued implementation of the PRRIP and fulfillment of Colorado's responsibilities under the PRRIP; (2) PRRIP coverage extends to Member's interests in facilities, water rights, and other water-related activities associated with the: i) irrigated acreage for Class A and W members; ii) municipal and domestic water supply system for Class M members; iii) diversions for self-supplied industrial water needs for Class I members; and, iv) depletions for Class X-2 members, upon which Member's Units are based; (3) Member must be current in payment of applicable fees and assessments levied by SPWRAP with respect to Member's Units; (4) PRRIP coverage does not obviate the need to follow procedural requirements of the ESA, including those related to Section 7 consultation, that may be or become applicable to Member or its activities; and (5) PRRIP coverage does not extend to site-specific project impacts that may affect federally listed species or designated critical habitat outside the scope of the PRRIP and Programmatic Biological Opinion.

Any member who is not a natural person must provide to SPWRAP the name of the person authorized to cast votes for that member. Any changes of such authorization must be made in writing and received by SPWRAP not less than 30 days prior to an annual meeting at which such votes are to be cast.

#### RATIONALE - Membership Units/Assessments

1. The traditional "trigger" for Platte Section 7 compliance, and thus the key driver for membership in SPWRAP, is construction, maintenance and/or operation of structures and facilities diverting out of the South Platte River and its tributaries. A membership covers all facilities of the member entity including diversion, conveyance, storage and other associated structures. Each entity utilizing those should have its own membership and certificate in SPWRAP.
2. Payment (Units) will be based on the following as more fully described in Article VI.B. of the Articles of Incorporation:
  - Class A: The acreage that is thereby irrigated through that member entity.
  - Class I: The member's diversions, in acre feet.
  - Class M: The member's single family equivalent taps, calculated as one SFE per half acre foot of potable water treated by or delivered to the water supply entity.
  - Class W: The irrigated acreage within the member's boundaries.
  - Class X-2: The "small depletion" determination made by the USFWS.
  - Class X-3: An entity that operates a plan for augmentation to replace the depletions caused primarily by rural domestic wells.
3. Where multiple structures / water rights of different member entities serve the same acreage, flexibility exists to allocate that acreage among the participating entities for purposes of determining assessments.

YEAR: 2007 - 2019

11.0 UNITS

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS M**

This certifies that **Mt. Carbon Metro District** "Member")  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the first increment of the Program as shown above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 9<sup>th</sup> day of September, 2009.

  
Asst. Secretary

[seal]

  
President

YEAR: 2011

13,140.0 UNITS

CERTIFICATE OF MEMBERSHIP

*South Platte Water Related Activities Program, Inc.*

CLASS M

**Roxborough Water & Sanitation District**

This certifies that \_\_\_\_\_ ("Member")  
has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 2nd day of May, 2011.

Craig Dewey  
Secretary

[seal]

Lisa B. Darling  
President

YEAR: 2011

19,644.0 UNITS

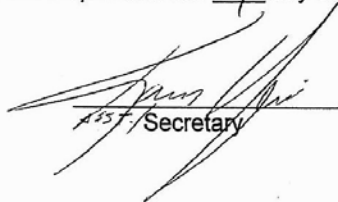
CERTIFICATE OF MEMBERSHIP

*South Platte Water Related Activities Program, Inc.*

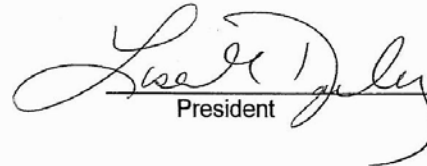
CLASS M

This certifies that **Stonegate Village Metropolitan District** ("Member") has become a Class M member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 7 day of March, 2011.

  
Secretary

[seal]

  
President

**YEAR: 2011**

**790.0 UNITS**

**CERTIFICATE OF MEMBERSHIP**

*South Platte Water Related Activities Program, Inc.*

**CLASS A**

**Western Mutual Ditch Company**

This certifies that \_\_\_\_\_, ("Member")  
has become a Class A member of the South Platte Water Related Activities Program, Inc. (SPWRAP), a non-profit corporation incorporated under the laws of the State of Colorado. This Certificate indicates that Member has paid all assessments owed on its membership through the current year identified above. This membership is not transferable except as may be provided in the Articles or Bylaws of SPWRAP. Additional terms, conditions and limitations pertaining to this membership are printed on the back hereof.

In Witness Whereof, SPWRAP has caused this Certificate to be signed by its duly authorized officers, and sealed with the seal of the corporation this 2nd day of June, 2011.

Cres Dewey  
Secretary

[seal]

Lisa B Darling  
President